THE AMERICAN NEPTUNE

A QUARTERLY JOURNAL OF MARITIME HISTORY

Volume 51, No. 3 Summer, 1991

Vol. 51, No. 3, 1991

ISSN 0003-0155

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Support of the journal depends upon receipts from subscriptions; no payment is made for contributions or for editorial work. Subscriptions are accepted only for complete volumes, which coincide with the calendar year. In return for subscriptions received after the beginning of the year, subscribers will receive the numbers that have already appeared in the current volume, as well as the numbers that will be published during the remainder of the year. Single copies are $8.50 each in 1991. Certain complete volumes of back issues are available, although in cases where the supply is greatly reduced some numbers are sold only as parts of complete volumes.

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The American Neptune (ISSN 0003-0155) is published quarterly at $32.00 per year for domestic subscribers, $35.00 per year for foreign subscribers and $8.50 per single issue, by the Peabody Museum of Salem, 161 Essex Street, East India Square, Salem, Massachusetts, 01970. To subscribe, write to *The American Neptune*, enclosing a check or money order in U. S. dollars made payable to *The American Neptune*, or your credit card number (M/C, A/E, or Visa), expiration date, and signature. Manuscripts, books for listing, and correspondence should be addressed to the Managing Editor. Second-class postage is paid at Salem, Massachusetts, and at additional mailing offices. POSTMASTER: Send address changes to *The American Neptune*, Peabody Museum of Salem, Museum Shop, 161 Essex Street, East India Square, Salem, Massachusetts 01970.

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A QUARTERLY JOURNAL OF MARITIME HISTORY

Volume 51, No. 3

Summer 1991

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SALEM, MASSACHUSETTS

PUBLISHED BY THE PEABODY MUSEUM OF SALEM, MASSACHUSETTS

PRINTED IN THE UNITED STATES OF AMERICA
BOOKCRAFTERS, CHELSEA, MICHIGAN

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EDITOR'S NOTE

No student of maritime history can fail to be impressed by the wealth of new information which has resulted from the finds of archaeologists. I purposely refrain from saying "underwater archaeologists," since we concede that archaeology is archaeology irrespective of the environment in which its practitioners work. What is of consequence at this moment is the tremendous impact which shipwreck finds have made upon our understanding of the past. But the results of efforts to discover, survey, and excavate shipwrecks, as well as ports and harbors, has an impact beyond the bounds of archaeology.

The important "green" movement advocating the defense of the world's environment has reached into the seas and waterways. The condition of the natural environment has an impact on the artifacts within that environment, on land or in the water. Consequently, the preservation of submerged cultural resources, primarily ships and their cargoes, is the focus of a growing number of national and local laws across the world's polities. Shipwrecks from the Americas to Australia are now subject to legal acts primarily designed to protect them for their historical value.

But the increased sophistication of underwater diving equipment, coupled with sonar and other scientific equipment used to locate wreck sites, has placed submerged historical artifacts at risk. Increasing numbers of sport divers, commercial fishermen, and treasure hunters are looting and stripping wrecks. Unfortunately, many states have no protective legislation, which permits a "finders, keepers" practice to exist. This places numerous wreck sites of historical value in jeopardy, threatened by the access now afforded to those who have no appreciation of the sites save for their monetary value.

In the United States, the enactment of the Abandoned Shipwreck Act in 1988 is the tangible result of public concern for the preservation of shipwrecks. In recent years the U. S. Navy, prompted by the Naval Historical Center, has acted to preserve naval vessels found in domestic and foreign waters. In Britain, the discovery of Henry VIII's great warship the *Mary Rose* led to legislative enactments for the preservation of wreck sites in that country, and examples elsewhere abound. But archaeologists complain that much more is to be done, that the preservation movement has only scratched the surface. Organizing the coalitions worldwide necessary to assure the preservation of submerged cultural resources is a daunting task.

But the legal and economic issues concerning maritime preservation will not be readily resolved, and the rights to numerous vessels are in dispute. The Confederate raider *Alabama*, for example, has been the subject of international controversy since her 1984 discovery in a watery grave off the coast of France. More recently, the Canadian government refused salvors access to the wreck of the passenger steamer *Atlantic* in Lake Erie, and as this issue of *The American Neptune* goes to press, conflict is brewing between salvors and the state of Ohio over the wreck of the 1850 steamer *Anthony Wayne*, also in Lake Erie. Because the state of Delaware did not protect it, the *De Braak* site was largely dismantled by salvors, and as a result, historians were deprived of valuable information. But it need not be so — the U. S. ceded to Canada rights to the War of 1812 vessels *Hamilton* and *Scourge* in an example of international cooperation for the sake of maritime preservation.

Equally important is the preservation of vessels still afloat, and there are many whose interests in preservation are focused on vessels of historical value which are not wrecks. The first order of business proclaimed by the recently formed National Maritime Alliance, created by the National Trust for Historic Preservation is to "save our ships!" This echoes the efforts of the World Ship Trust, formed to save historic vessels.

The public fascination with ships on or under the water allows professionals a window of opportunity to educate that public on the value of its maritime heritage. It is, therefore, appropriate that the maritime community close its ranks in support of preservation efforts above and below the waterline. We need only recall the remarkable example of the recently deceased Frank G. G. Carr, former director of the National Maritime Museum at Greenwich (1947-66) and the savior of the *Cutty Sark*. Carr worked tirelessly to save the clipper ship after he saw the last surviving 74-gun man-of-war, the *Implacable*, blown up in the English Channel in 1949 for lack of funds to preserve her. Carr wept and swore "Never again!", words which became the motto of the World Ship Trust.

TIMOTHY J. RUNYAN

Cleveland, Ohio

The Nightingale and the Steamship: Jenny Lind and the Collins Liner *Atlantic*

EDWARD W. SLOAN

THE American concert tour of Jenny Lind — the celebrated "Swedish Nightingale" — was a great experience for the United States in the nineteenth century. It was one that would be cherished and endlessly memorialized throughout the nation for many decades thereafter, and it all began in New York City. Early in September of 1850, Jenny Lind arrived at New York, having endured a storm-tossed steamship voyage across the Atlantic Ocean. Her arrival was the occasion for a great public spectacle, perhaps greater than any that New Yorkers had ever experienced previously. From her very first New York performance Jenny Lind was a smashing success, and wherever she subsequently toured in the United States she evoked similarly unrestrained adulation from those who heard her, or even those who had no more than a distant glimpse of her. Yet Jenny Lind's American triumph was not inevitable, nor did it occur simply through her own remarkable vocalizing; also of crucial importance were the long, elaborate, and prodigious efforts of her promoter — the master showman of America, P.T. Barnum.[1]

Barnum had taken on a formidable risk in contracting with Jenny Lind for such an extensive concert tour. He had staked his entire fortune as well as his reputation on the Swedish Nightingale; he thus determined that as little as possible should be left to chance. Accordingly, for months before her scheduled arrival, Barnum fed American newspapers — especially those in New York — with rapturous accounts of Jenny Lind's current triumphs in Europe, so that her potential American audiences would be duly impressed. Suitably encouraged to attend her performances and preconditioned to applaud her unreservedly, those Americans privileged to hear her, Barnum recognized, would surely become her best advertisements by spreading the word before her as she travelled throughout the United States.[2] But it all had to begin with New York City. For a public entertainer such as Jenny Lind, even more then than now, if she could make it there, she could make it anywhere.

In orchestrating Jenny Lind's New York reception, Barnum determined to bring her across the Atlantic Ocean and present her to America in the grandest possible style. For Barnum and his fellow New Yorkers, there really was only one way to accomplish this maritime introduction with all the dramatic flair and showmanship it demanded — on a steamship of the Collins Line.

Several months before, on April 27, 1850, a wildly cheering crowd numbering in the tens of thousands had witnessed the initial sailing from New York Port of the huge wooden sidewheel steamship *Atlantic*.[3] She was the first of four essentially identical ocean-going steam vessels that would comprise the New York and Liverpool United States Mail Steamship Company. With the inauguration of this transatlantic steamship service, Americans were to provide for the first time a formidable challenge to the oceanic preeminence of the Liverpool-based British and North American Royal Steam Packet Company.

1. A.H. Saxon, *P.T. Barnum: The Legend and the Man* (New York: Columbia University Press, 1989), pp. 164-65. Another scholarly and astute analysis of Jenny Lind's American appearance and Barnum's promotional efforts is in chapter five of Neil Harris' *Humbug: The Art of P.T. Barnum* (Chicago: University of Chicago Press, 1973).

2. P.T. Barnum, *Struggles and Triumphs; or, Forty Years' Recollections* (Hartford: J.B. Burr & Company, 1869), pp. 281-86; Saxon, *Barnum*, pp. 164-65; Harris, *Humbug*, pp. 113-123. For extended accounts of such preparations see W. Porter Ware and Thaddeus C. Lockard, Jr., *P.T. Barnum Presents Jenny Lind: The American Tour of the Swedish Nightingale* (Baton Rouge: Louisiana State University Press, 1980) and Charles G. Rosenberg, *Jenny Lind in America* (New York: Stringer & Townsend, 1851).

3. *New York Herald*, April 28, 1850; *New-York Daily Tribune*, April 29, 1850; *New York Journal of Commerce*, May 1, 1850; *The Independent*, May 2, 1850.

On both sides of the Atlantic these rival shipping firms were rarely identified by their formal and cumbersome titles. Instead, they were familiarly known by the names of their respective managing agents and promoters — Collins and Cunard. The British-operated Cunard Line, which by 1850 had dominated the transatlantic steam liner business for nearly a decade, took its name from its founder, Samuel Cunard. The Collins Line, an American enterprise which now sought to contest this British hegemony on the major transatlantic run, was to an even greater extent the achievement of one man — Edward Knight Collins.[4]

Since the early 1820s, Collins had successfully operated sailing packet lines, both coastal and transatlantic, out of New York Port. By 1850 he had sold all of his sailing vessel interests and launched himself and his fortune on the most risky and ambitious venture of his career, running a transatlantic steamship line between two of the major maritime centers of the world, New York and Liverpool. As both hostile and supportive contemporaries recognized, with the maiden voyage of his steamship *Atlantic*, Collins had initiated the most luxurious and expensive seagoing commercial enterprise the world had ever seen.[5]

4. Particularly thorough and authoritative on the *Atlantic* and her sisterships is Charles B. Stuart's *The Naval and Mail Steamers of the United States* (New York: Charles B. Norton, 1853), pp. 115-29, written by a former Engineer-in-Chief of the United States Navy. The wealth of detail on the Collins steamers in this book is remarkable, as is the glowing assessment of Collins' enterprise. The volume itself "is dedicated with sentiments of respect and esteem, to Edward K. Collins, to whose genius and untiring efforts our country is greatly indebted for one of the proudest achievements of science and enterprise."

The most authoritative recent account of the Collins steamships is by the highly regarded naval architect and historian, Cedric Ridgely-Nevitt. His *American Steamships on the Atlantic* (Newark, DE: University of Delaware Press, 1981) contains a long, well annotated chapter on the Collins Line, focusing on the technical details of the steamships. An older work that is more chronological and political in emphasis is David B. Tyler's scholarly treatment of nineteenth century transatlantic steamship development, *Steam Conquers the Atlantic* (New York: D. Appleton-Century Company, 1939); this work remains as the standard work on its subject, and it devotes several chapters to the history of the Collins Line and its vessels.

The Cunard Line receives a detailed, well researched treatment in Francis E. Hyde, *Cunard and the North Atlantic, 1840-1973: A History of Shipping and Financial Management* (Atlantic Highlands, NJ: Humanities Press, 1975); see chapters one and two for the early years and the competitive relationship between the Collins and Cunard Lines.

5. A recent, brief examination of Collins' career is Edward W. Sloan, "Edward Knight Collins: Maritime Entrepreneur and Impresario," *The Log of Mystic Seaport* 40 (Spring, 1988): 3-17; for details of Collins' early years in shipping, see Sloan, "The Roots of a Maritime Fortune: E. K. Collins and the New York-Gulf Coast Trade, 1821-1848," *Gulf Coast Historical Review* 5 (Spring, 1990): 104-113.

No more than a few weeks after the *Atlantic*'s highly publicized inauguration of the Collins Line's operations, P. T. Barnum had secured passage for Jenny Lind and her troupe on this steamship. To be sure, there were other vessels available; by this time another and equally splendid Collins liner was in service, and there were frequent and regular sailings of the Cunard steamships from Liverpool to New York. Yet the intense interest that New Yorkers had already shown in Collins' *Atlantic* was an important consideration for Barnum. He needed to do everything possible to publicize Jenny Lind; her travelling to America on the celebrated Collins liner could only enhance the drama of the Swedish Nightingale's arrival.[6]

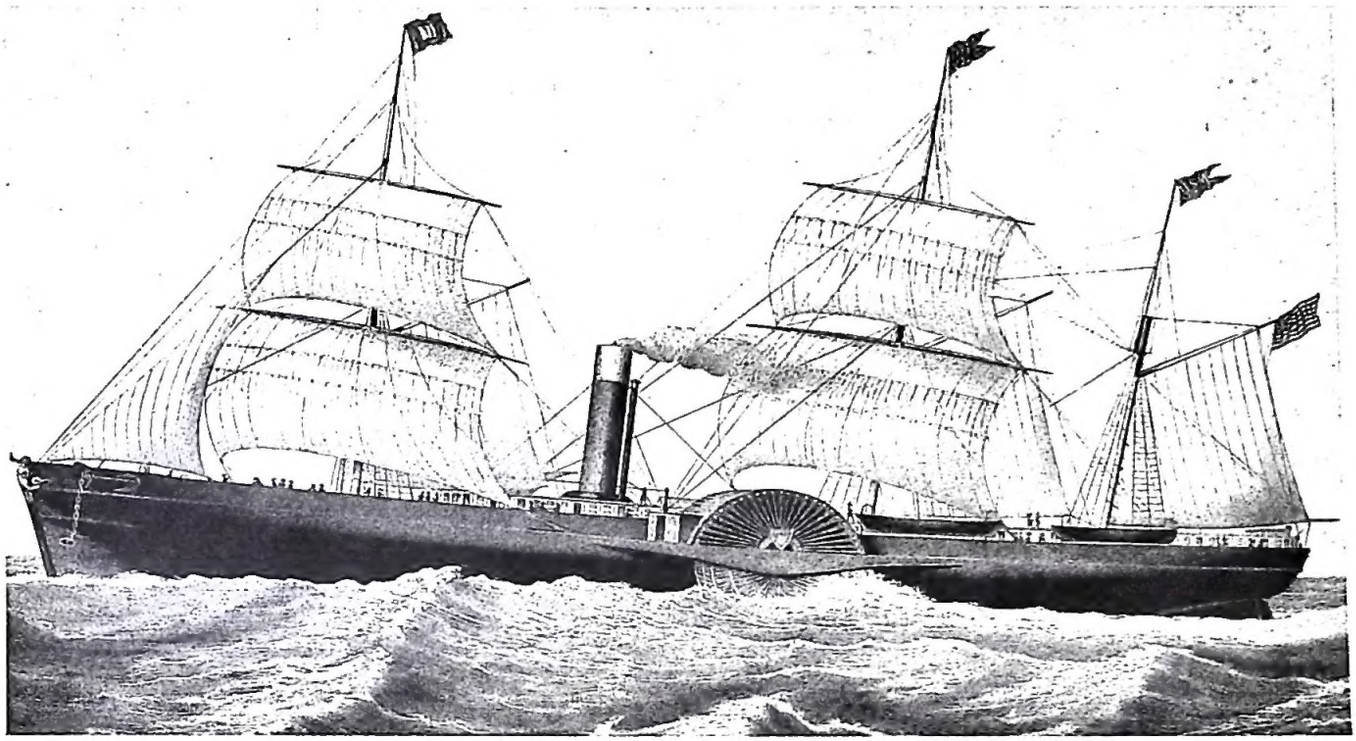
There was good reason to celebrate the *Atlantic*. In an age of technological wonders, this mammoth steamship stood out as an exceptional accomplishment. One of the largest oceangoing vessels in the world, she had been built at enormous expense and designed to provide unprecedented speed, luxury, and elegance of service. Her presence on the sealanes marked a re-emergence of the United States as a leader in maritime innovation, in technological and industrial achievement, and in quality of performance.

Moreover, her importance as a national symbol matched her significance in expressing, in such a magnificently tangible fashion, the capabilities of those individual Americans who designed her, built her, financed her, and operated her. As symbol, she embodied American prowess and conveyed American pride. The *Atlantic*, as America's mid-century challenge to the Old World, was a thrilling assertion of size, splendor, and power to defy the presumptions of any other nation — especially England.

From the time of her launching in February, 1849, the *Atlantic* invited superlatives. Everything about her, as New York City newspapers and journals proclaimed, was extraordinary if not unique. In an era when shipowners rarely spent more than $100,000 to build the largest and most lavishly equipped sailing vessel, the initial cost of the *Atlantic* was at least $550,000 — and nearly half of that amount was just for her machinery. When fully equipped for her transatlantic service to Liverpool, she cost upwards of $800,000.[7] The largest sailing vessels of

6. *New York Herald*, July 2, 1850; Barnum, *Struggles and Triumphs*, pp. 281-86; Saxon, *P.T. Barnum*, p. 15.

7. Estimates of the *Atlantic*'s cost, which approximated that for each of the other Collins steamships, range between $550,000 and nearly $800,000. Cedric Ridgely-Nevitt, in his *American Steamships on the Atlantic*, p. 154, calculates $675,000 as the most likely amount for each Collins liner. Alexander Crosby Brown, who did exhaustive research in



At the time of her launch in 1849, the Collins liner *Atlantic* was one of the largest and most luxurious, expensive, and technologically advanced commercial vessels in the world. Currier lithograph, 1852, from the collection of Edward W. Sloan.

this period — whether transatlantic packets or clippers — rarely exceeded 1,500 tons cargo capacity; the *Atlantic*'s registered tonnage was 2,850 and her displacement tonnage was approximately 5,200. Her unusually high freeboard made her tower over other vessels and emphasized her massive appearance. Two hundred eighty-five feet in length, with a 46-foot beam and a 31-foot measurement from her keel to the upper deck, the *Atlantic* provided sufficient space for two hundred cabin passengers, while still carrying 1,000 tons of cargo and as much tonnage in coal for fuel.[8] In contrast, the big transatlantic sailing packets, although of greater effective cargo capacity, rarely carried more than thirty-five passengers in their cabins.

The *Atlantic*, like her sisterships and all of Cunard's transatlantic liners at that time, was a wooden sidewheeler. Overhanging her hull for 15 feet on each side were huge paddleboxes, each containing a wheel of 35 feet in diameter with 28 radial floatboards, each over 12 feet wide. She was powered by two ponderous and horribly inefficient 1,000 horsepower coal-fired, simple reciprocating steam engines.[9] Aided by a substantial array of sails, at least when steaming across to Liverpool with

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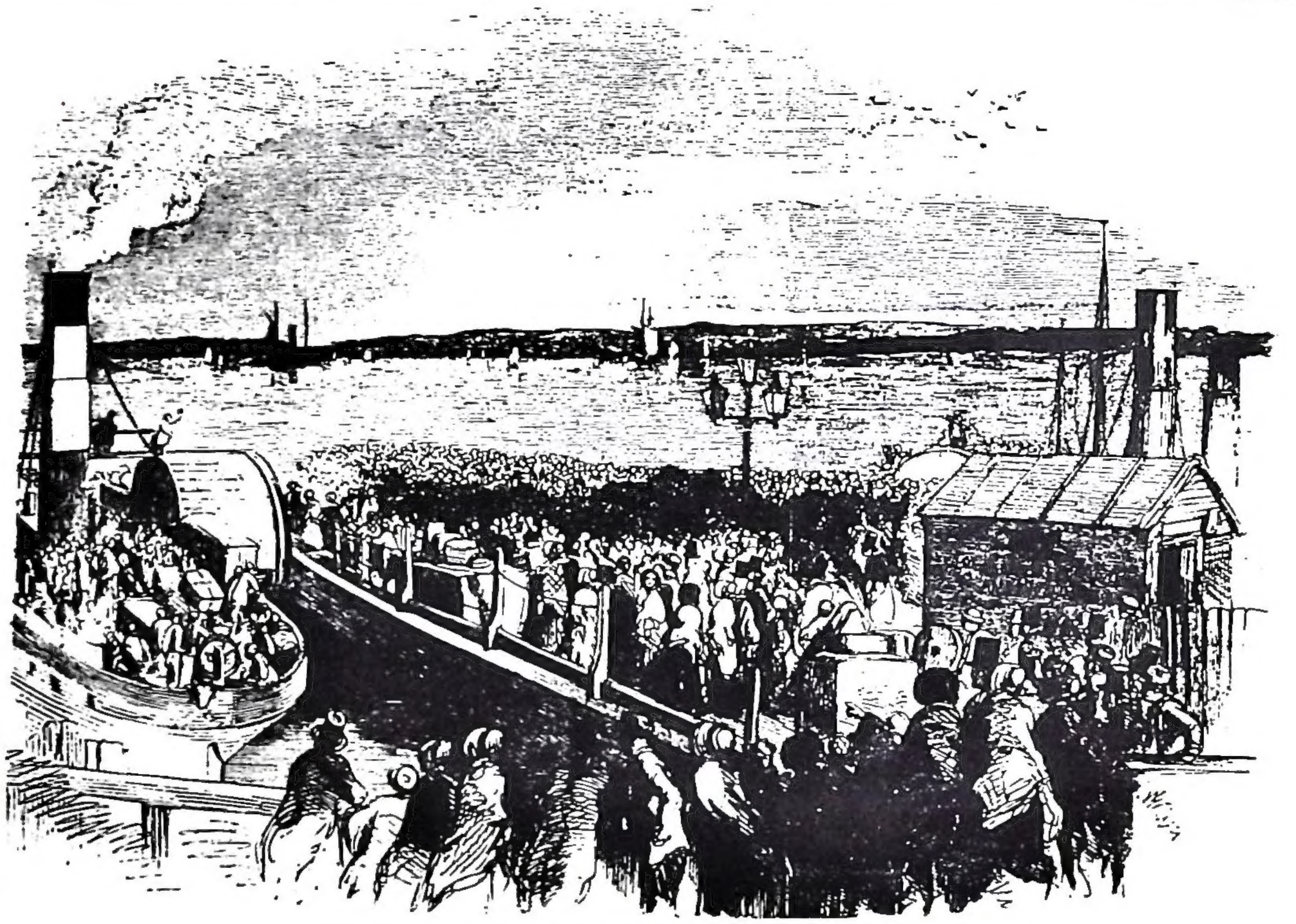
preparation for his *Women and Children Last: The Loss of the Steamship "Arctic"* (New York: G.P. Putnam's Sons, 1961), sets the figure (on p. 15) for the *Atlantic*'s sistership at $700,000.

8. There was no exact agreement on the *Atlantic*'s measurements. An authoritative "Description of the Steamship 'Atlantic'" appeared in the *Journal of the Franklin Institute*, 3rd Series, 19 (May, 1850): 352-53; this detailed contemporary report was probably written by the naval engineer Benjamin F. Isherwood, whose research activities and the voluminous and precise engineering publications that resulted were legendary among marine engineers both within the United States Navy and without. According to this *Franklin Institute Journal* report, the *Atlantic* measured 290 feet "extreme length on deck," 46 feet breadth of beam, 32 feet depth of hold, and 2,900 tons by Custom House measurement.

9. "Horsepower" is a particularly elusive term. "Indicated Horsepower" (IHP) is calculated differently from "Nominal Horsepower," to the extent that reported figures will vary considerably depending on what (usually undefined) category of measurement is being used. Contemporary reports placed the *total* horsepower (undefined, of course) of the *Atlantic* at 1,000. However, Cedric Ridgely-Nevitt, *American Steamships on the Atlantic*, p. 154, argues that while 1,000 horsepower was required by the original contract, "the value installed was over 2,000 and may have been as high as 2,500 IHP under optimum conditions." At least, all could agree that when they went into service the Collins steamships were substantially more powerful — and fuel-hungry — than other oceangoing steamers of that era.



DEPARTURE OF MDLLE. JENNY LIND FROM LIVERPOOL FOR AMERICA.

The crowd that observed Jenny Lind's departure from Liverpool, pictured here in *The Illustrated London News* of August 24, 1850, p. 172, would be equalled by the throng that greeted her arrival in New York eleven days later.

the normally favorable prevailing winds, these engines were capable of driving the *Atlantic* across her namesake ocean at a steady eleven to twelve knots. Such consistent speed over many days of ocean travel rivalled that of the swiftest clipper ships and considerably exceeded the average time made by the transatlantic sailing packets, even under the most favorable wind conditions.

Contemporaries might marvel at the *Atlantic*'s mighty hull and massive machinery, but they fully unleashed their admiration when describing her passenger accommodations, together with the other remarkable interior details that set a new standard of luxury on the Atlantic Ocean. "Descending to the Saloons," observed the *New-York Tribune* in a lead editorial, "we find a series of rich apartments, finished with the latest improvements, and rivalling the most aristocratic of mansions in the

appointment of all their parts."[10]

Of course, the dazzling decor, the expansive accommodations, the ingenious and novel mechanical devices to enhance passenger comfort (including central steam heating), and the ever-present sumptuous service were only to be expected of Edward Knight Collins. Already famed for the elegance of accommodations and

10. *New-York Daily Tribune*, April 22, 1850. For equally enthusiastic and detailed accounts of the *Atlantic*'s furnishings, see the *New York Herald* for February 1, 1849 and January 15, 1850. The highly complimentary report on the *Atlantic* that *Chambers's Edinburgh Journal* published in its June, 1850 issue was reprinted by the *New York Herald* of August 15, 1850 and also by *Harper's New Monthly Magazine*, 1 (August, 1850): 411-14.

service in his transatlantic sailing packets, not to mention their remarkable speed, E. K. Collins had determined that his new steamships would greatly surpass anything yet seen on the oceans. In particular, he argued, they would so outclass the Cunard steamships that not just Americans but Europeans as well would flock to the Collins Line. In 1850, there were few who would disagree.

Jenny Lind sailed on the *Atlantic* from Liverpool on August 21. Her departure was one of the great public events witnessed by that newly emerging center of world commerce. English papers by this time were complaining to readers at home and abroad about the "Lind lunacy" and "Lindomania" that was sweeping through the British Isles. A crowd estimated at between 50,000 and 80,000 — the latter figure being roughly half the entire population of Liverpool — cheered for hours as the *Atlantic*, with an escort of hundreds of small steamers and sailboats, obligingly steamed past the crowded wharves before departing for America. As the Collins steamer departed Liverpool, the *New-York Tribune* reminded its readers that "This day the Swedish Nightingale bids a temporary adieu to Europe, winging her way across the Atlantic to gladden the American heart by her matchless gift of song."[11]

New York City's reception for Jenny Lind and the *Atlantic* was equally splendid and fervent. The *New-York Tribune*, relying on the *Liverpool Times* for information on New York's local arrangements, erroneously, if enthusiastically, reported that when Jenny Lind landed in New York:

> Forty young ladies, of our first families, are to appear, dressed in white, on the pier, and escort her to a splendid carriage, drawn by four milk-white horses, in which she will be conveyed to her hotel.[12]

Having completed all of his own lavish arrangements for Jenny Lind's official landing at the Canal Street wharf of the Collins Line, on the Hudson (or North) River, Barnum took a boat out to Staten Island so that he could be the first to greet the Swedish Nightingale when her steamship passed through the Narrows and entered the Bay.[13]

Early on Sunday morning, September 2, the *Atlantic* came into view. Barnum was rowed out to the incoming steamship; the large, portly showman then sprang aboard the *Atlantic* and rushed breathlessly on deck to present Jenny Lind with a large bouquet of flowers.[14] But to his chagrin, Barnum discovered that he was both too little and too late. Jenny Lind already held a bouquet that was three times the size of Barnum's, and proudly standing next to her was its short, burly donor — Edward Knight Collins.[15]

When the *Atlantic* steamed up to the wharf with her famous passenger, there was pandemonium. The crowd of

11. N. Parker Willis, *Memoranda of the Life of Jenny Lind* (Philadelphia: R.E. Peterson, 1851), pp. 183, 204; *New York Times*, August 15, 1850; *New-York Daily Tribune*, August 21, 1850; Wilmer & Smith's *European Times*, quoted in *New-York Daily Tribune*, September 2, 1850.

12. *New-York Daily Tribune*, August 19, 1850. By this time Jenny Lind was such a major news item that the *Tribune* carried this story on Page 1, Column 1.

13. Barnum, *Struggles*, p. 287; Saxon, *P.T. Barnum*, pp. 15-16.

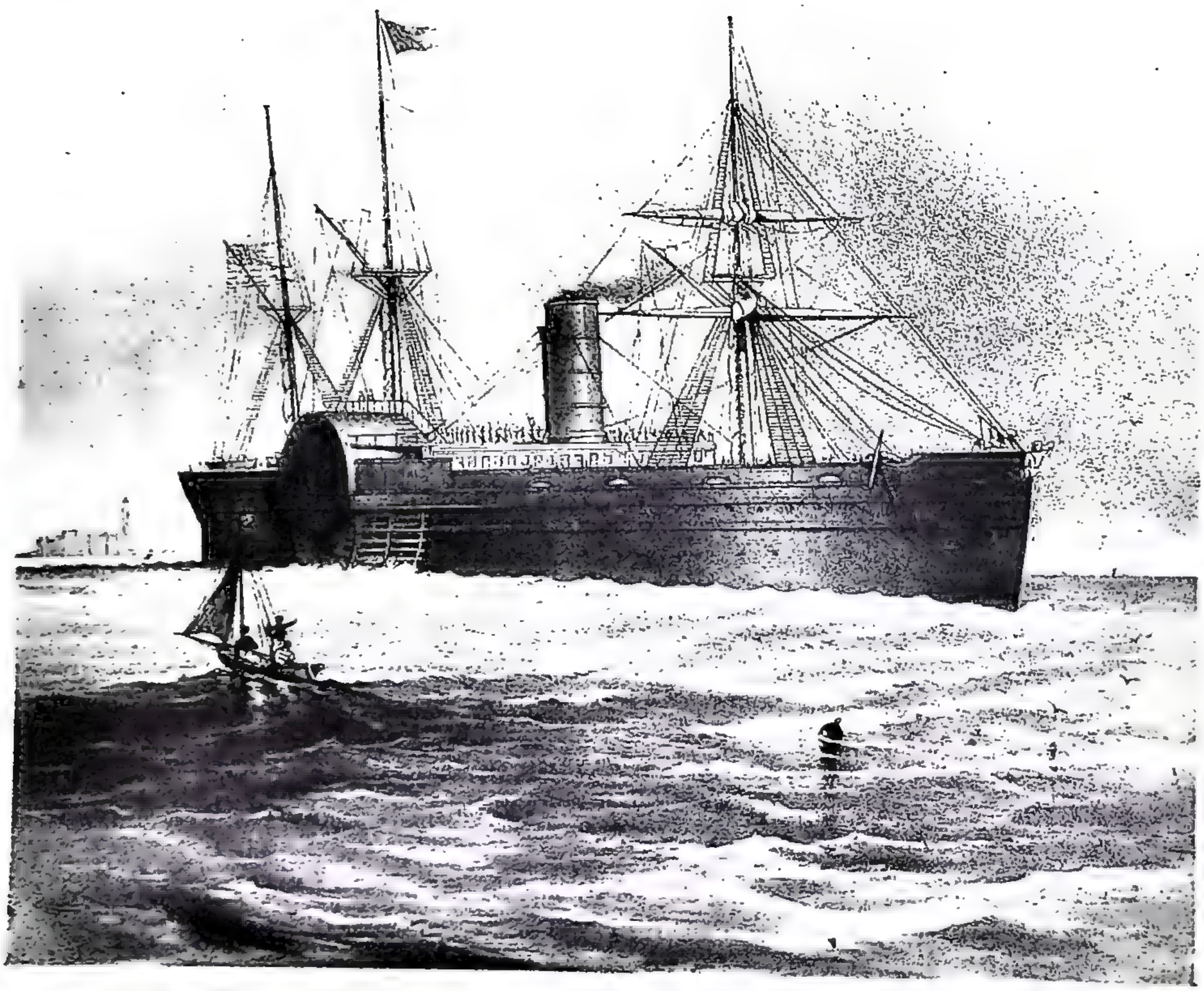
14. *New-York Daily Tribune*, September 2, 1850; Rosenberg, *Jenny Lind in America* , p. 8.

15. *New-York Daily Tribune*, September 2, 1850; this account was reprinted in the *Illustrated London News*, September 21, 1850, p. 247. Another version was that of the young New York attorney and rising politician, A. Oakey Hall. Many years later, Hall's eye-witness account, which essentially agrees with that in the *Tribune*, was published in the November, 1896 issue of *Ladies' Home Journal*; portions of it are quoted in Ware and Lockwood, *P.T. Barnum Presents Jenny Lind*, pp. 6-7. Understandably, Barnum made no mention in any of his memoirs of the incident with Collins, and Saxon's authoritative biography of Barnum does not include the incident. Among contemporary observers, the *New York Herald*, although customarily interested in whatever Collins did, makes no reference to the Collins-Barnum meeting, nor does Charles Rosenberg. Other contemporary versions of Jenny Lind's arrival, notably N. Parker Willis, *Memoranda of the Life of Jenny Lind*, derive their account of the Collins-Barnum meeting from those in current newspapers, whether American or English. Barnum's biographers appear to be divided over whether or not to relate the incident; of those who do, M. R. Werner, in *Barnum* (Garden City, NY: Garden City Publishing Company, 1926), p. 147, obviously depends on the *Tribune*'s version.

The humorous and satirical potential of this incident was best realized by *Punch, or the London Charivari* 19 (July-December, 1850): 146, 149, in its piece on "Jenny Lind and the Americans." With little love for Americans, that influential British journal and arbiter of public taste offered its readers a jocular account of Jenny Lind's Liverpool departure, voyage, and New York arrival, complete with a cartoon ("Coronation of Jenny the First — Queen of the Americans") that portrayed New Yorkers fawning over the singer in a shabby betrayal of their democratic ideals. Exercising more than a bit of artistic license, Punch then described the scene of her arrival in New York:

> MR. BARNUM, the enterprising showman ... was running a race along the pier with a MR. COLLINS — perhaps a rival showman — each holding an enormous bouquet, and a fearful struggle took place as to which should be the first to clamber up the paddle box. BARNUM made a desperate spring on one side, while COLLINS took a terrific leap towards the other, and the latter being the more fortunate, or the more active of the two — or perhaps he had been taking lessons in gymnastics beforehand of some Indian-rubber brothers — succeeded in being the first to stand at the Nightingale's side, and to present her with a nosegay twice the size of that which BARNUM pushed into her hand a moment afterwards.

THE ATLANTIC GALOP



"The Atlantic Galop" was just one of the popular songs inspired by the enthusiasm of Americans for the Collins liner *Atlantic*. Courtesy of The Mariners' Museum, Newport News, Virginia.

New Yorkers that welcomed Jenny Lind rivalled in size and enthusiasm the throng that had seen her off from Liverpool. The British journal *Punch* took a typically critical view of this "Yankee mob" and remarked:

> As the ship neared the pier, every mast seemed to be made of eyes, noses, and mouths; every window was a mass of heads, and the roofs of houses looked as if they were slated with human beings, and had men and women for chimney-pots.

The crowd that mobbed Jenny Lind once she came ashore, *Punch* continued, was "one tremendous crush of beings, so densely packed together that an exceedingly ripe cheese, in spontaneous motion, is the only thing to which it would bear comparison."[16]

New York City observers of the multitude agreed. Perplexed at the spectacle that fellow citizens were making of themselves, the New York-based journal *Scientific American* bemoaned the behavior of the frenzied crowd that "rushed and pushed themselves, some with their noses in the gutter, others with their hats in squash, to get a sight of her."[17] There was a near riot among the "dense and suffocating horde of onlookers," many of whom had been waiting for hours to see Jenny Lind. The wharves were so crowded that several people were hurled into the water and many were trampled underfoot; miraculously, no one was seriously injured.[18]

Conservative New Yorkers deplored the whole affair, especially as it all took place on the Sabbath. "Sunday was disgraced sadly in New York," commented one such observer. "There are tens of thousands among us who have not the right spirit for freemen — they obey no fixed principles of true self-mastership and dignity, without which they cannot be true republicans."[19] Such deplorable behavior, insisted another, should not be considered genuinely American, and Jenny Lind should be so informed; he explained that:

> The breach of the Sabbath by such persons is inevitable in a population so large as that of New York, and comprising so many foreigners with their usually loose notions of the sanctity of the Lord's day.[20]

16. Ibid.
17. *Scientific American*, September 7, 1850.
18. *New-York Daily Tribune*, September 2, 1850.
19. *Scientific American*, September 7, 1850.
20. Editorial, "Jenny Lind," in *The Independent* 2 (September 19, 1850).

In all the furor, scarcely anyone other than E.K. Collins, his business associates, and a few newspaper reporters realized that the *Atlantic* had made a remarkably fast passage — eleven days and two hours, wharf to wharf, notwithstanding unusually stormy weather and severe headwinds for the first half of her crossing. During one 24-hour period, steaming against a headwind, the *Atlantic* had achieved a record 323 miles: an average speed of nearly 13½ miles per hour, or 11.7 knots.[21]

Collins, perhaps even more than Barnum, must have relished the occasion of Jenny Lind's arrival on his steamship *Atlantic*. This remarkably well-publicized and favorable oceanic crossing further enhanced the reputation of the Collins Line, just as its triumphant conclusion gave a tremendous boost to Barnum's promotional efforts. Surely both Collins and Barnum would have agreed with that eminent New Yorker, Philip Hone, in his diary entry describing Jenny Lind's arrival on the *Atlantic*: "This noble steamer," wrote Hone, "was a most fitting fiddle-case, a suitable cage for such a bird."[22]

21. *New York Herald*, September 2, 1850.
22. Philip Hone, *The Diary, 1828-1851*, ed. by Allan Nevins (New York: Dodd, Mead & Company, 1936), p. 921 (entry for September 3, 1850).

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The *DeBraak* Legacy: An Analysis of Eighteenth Century Rigging

FRED W. HOPKINS AND DONALD G. SHOMETTE

ON April 1, 1798, off the Western Isles, HMS *St. Albans*, 64, Francis Pender commanding, and HM Sloop of War brig *De Braak*, 16, James Drew commanding, were escorting a convoy of thirty American and four British merchantmen toward the American coast. When Captain Pender of *St. Albans* sighted two strange sails, he immediately signalled for *De Braak* to give chase. She soon discovered that the suspect vessels were HMS *Magnamine* and her recently captured prize, the French privateer *Victory*. But within hours the weather began to sour. By the following day, the convoy was being buffeted about by increasingly turbulent winds, and *De Braak* began to fall even further astern of the convoy. The next two days of stormy weather aborted every attempt to maintain the convoy, and by April 4, only seven merchantmen remained with *St. Albans*. *De Braak* was nowhere to be found.[1]

For the following seven weeks, the whereabouts and activities of Captain James Drew and his small brig-sloop are unknown. It is during this historic vacuum in time that legend was to ascribe to Drew and *De Braak* innumerable adventures and marvelous exploits against a Spanish treasure fleet that never was. With the sudden, tragic loss of the warship and part of her crew off Cape Henlopen, Delaware in May, 1798, her place in American folklore was assured. As a result, for over 187 years the myth of Spanish gold believed by many to be aboard *De Braak* would grow, enticing a steady stream of treasure hunters to search for her bones and the vast treasures said to be lying amongst them.

The documentary origins of *De Braak* are clouded by time. That she was built prior to 1785, when she first appears on the Dutch Navy lists as having been purchased by the Admiralty of the Maas, one of the Dutch republics, is certain. *De Braak* was documented as a cutter displacing 225 tons with a deck of 84 feet, a keel length for tonnage of 57 feet, an extreme beam of 28 feet 11 inches, and a depth in hold of 11 feet.[2]

In January of 1795, while under the command of Captain Johann von Grootenwray, *De Braak* put in at Falmouth, England, to replenish her stores in company with components of a Dutch convoy bound for the East Indies. As fortune would have it, war had broken out between Great Britain and Napoleon's new puppet government in the Netherlands, the Dutch Batavian Republic. *De Braak* was interned, along with five other Dutch naval vessels and twenty-four merchantmen. The warships were eventually seized by the Royal Navy. In late June, 1796, a British crew sailed *De Braak* to Plymouth while the Admiralty decided upon the disposition of the Dutch fleet. On August 26, it was officially determined that all of the Dutch warships would be surveyed to ascertain their suitability for induction into the Royal Navy. On September 15, 1796, the vessels were "ordered to be got ready for commission immediately." *De Braak* was re-rigged as a brig and armed with sixteen 24-pounder carronades and two 6-pounder long guns. Owing to the shortages caused by the war and the Great Mutiny, it would not be until June of 1797 that *De Braak* was finally fitted for sea duty. On June 3rd, Lieutenant James Drew, a forty-five-year-old veteran naval officer, was given command of the brig and her eighty-five man crew.[3]

From July until December of 1797, *De Braak* was employed in convoy duty off the British coast. The continuous duty was vigorous and dangerous, both from

1. Public Records Office, ADM 51/1272, Part 6, Log of *St. Albans*, 1-2 April, 1798. (Henceforth this archive will be listed as PRO.)

2. *De Braak* Plans, Registration 6346, Box 65, Admiralty Collection of Draughts, National Maritime Museum, Greenwich, England.

3. Howard I. Chapelle and Lt. Col. M.E.S. Laws, "HMS *De Braak*: The Stories of a Treasure Trip," Smithsonian *Journal of History* (Spring 1967): 57-66.

constant exposure to the elements as well as encounters with the enemy. On December 21, 1797, *De Braak* returned to Plymouth from a cruise "with loss of mainmast, which appears to have gone by the board, but whether it was occasioned by a gale of wind or in an action is uncertain; there is a probability, however, that it was by the latter as a number of shot holes appear in several of her sails."[4] An extensive refit was imperative, and repairs continued until February, 1798, during which period Captain Drew commented that he considered his ship to be overmasted.[5]

When *De Braak* departed Plymouth in early March of 1798, she was under orders to join with *St. Albans* to convoy a fleet of merchantmen to North America. The convoy was to journey to the mouth of the Delaware Bay where it would divide. *De Braak* would escort those vessels bound for southern ports while *St. Albans* would shepherd the remaining vessels to the northern ports of Philadelphia, New York, and Boston. Convoy duty completed, *De Braak* was to rejoin the Royal Navy command at Halifax.[6]

It was during this Atlantic crossing that *De Braak* disappeared from the sight of history for seven weeks. *St. Albans*, obliged to hold her convoy together, made no attempt to search for the missing brig. On May 24, 1798, Pender sighted the Chesapeake Capes, delivered three merchantmen safely into Chesapeake Bay and then turned northward. The following morning Pender reached the Delaware Capes and saw several more vessels, bound for Philadelphia, into the Delaware River, and pressed on to New York. Barely hours after Pender and *St. Albans* departed, the long lost *De Braak* arrived off the Capes escorting a Spanish prize vessel, the *Don Francisco Xavier*. It appears that after having been separated from the convoy by the storm, *De Braak* found herself unable to rejoin her charges. On or about May 5, 1798, she had fallen in with and captured *Xavier* bound for Cadiz, Spain, from Rio de la Plata with a cargo of 200 tons of copper, a quantity of cocoa, and general goods valued at £150,000. Captain Drew dispatched a twelve man prize crew to take charge of the Spaniard and remove all but four of her crew to *De Braak*.[7]

It was approximately 4 P.M. on May 25, 1798, when Captain Drew and *De Braak*, followed by the Spanish prize, rounded Cape Henlopen and entered Old Kiln Road, off Lewes, Delaware, under mainsail and reefed topsail. A pilot named Andrew Allen had been taken aboard, and the brig's six-oared cutter had already been deployed waiting to take Captain Drew ashore to Lewes. What occurred next was sudden and devastating to *De Braak* and her crew. A violent and "sudden flow of wind" heeled the brig over on her beam ends so quickly that within seconds she filled with water through her open hatches. Those unfortunate souls below decks had absolutely no warning, and those topside were cut down by heavy guns rolling across the deck. In the twinkling of an eye, thirty-five officers, crewmen, marines, and a dozen Spanish prisoners went down with the brig. Thirty-two crewmen and pilot Andrew Allen, all of whom had managed to scramble into the cutter, reached safety aboard the Spanish prize. All that could be seen of the little brig was her top gallant mast standing above the sea's surface.[8]

The good citizens of Lewes quickly came to the aid of the few victims, both living and dead, who washed ashore. On May 28, 1798, the body of Captain James Drew was found on Cape Henlopen by Jacob Bailey, an employee of the Cape Henlopen lighthouse. After a brief internment in the home of Daniel Rodney, the captain's corpse was buried in a vault in St. Peter's Episcopal church in Lewes. But it was from the survivors of the *De Braak* tragedy that the legend of Spanish treasure materialized. Allegedly, a number of survivors, including several Spanish prisoners, who had floated ashore in Drew's sea-boat, paid the citizens of Lewes for their food and lodging with Spanish gold and silver. These same survivors also supposedly bemoaned the fact that *De Braak* held a treasure trove of gold, silver, and diamonds taken from several Spanish treasure ships during *De Braak*'s seven week hiatus from the convoy, or so it was reported in the press nearly ninety years after the fact.[9]

Over the years the legend persisted and grew, with the value of the treasure fluctuating between two million and half a billion dollars. There seemed to be little concern that a major Spanish treasure fleet had not left South American waters for Spain for more than twenty years prior to the capture of *Don Francisco Xavier*. Indeed, the only real treasure was the strategically valuable cargo of copper, which had not been transferred from the Spaniard

4. *The Times* (London), 25 December 1797.

5. PRO ADM, 1/1719, Navy Board to Marsden, 11 December 1797; ADM 106/2088, Navy Board to Admiralty, 16 December 1797.

6. PRO ADM, Out Letters, Admiralty to Pender, 23 February 1798; ADM 1/1720, Drew to Nepean, 2 March 1798 and 7 March 1798; ADM 2/1099, Admiralty to Pender, 23 February 1798.

7. PRO ADM 51/1272, Part 6, Log of *St. Albans*, 24-25 May 1798.

8. PRO ADM 1/5121/3, Special File Proposed Salvage of *De Braak*, Bond to Greenville, 28 May 1798.

9. *The Sun* (Baltimore, MD), 25 July 1887.

at all, and with the cocoa was valued at only £150,000. Upon learning of the accident, the senior British naval commander on the North American Station in Halifax ordered a naval reconnaissance of the site to be carried out. Satisfied that *De Braak* lay in shallow enough water that she might be recovered, he ordered HMS *Hind* and the salvage brig *Vixen* to attempt to raise *De Braak*. After several repeatedly unsuccessful efforts, however, *Hind* and *Vixen* returned to Halifax, leaving *De Braak* and the alleged cargo of Spanish booty to future generations of treasure hunters.[10]

Beginning as early as the 1880s, numerous salvage attempts were mounted to locate *De Braak*'s hull and recover the ever-elusive treasure trove. All attempts failed until a treasure hunter named Harvey Harrington organized a company called Sub-Sal, Inc., and in 1984 successfully located the *De Braak* wreck site. Harrington received an exclusive salvage permit from the State of Delaware in exchange for 25 percent of all treasure trove and artifacts recovered.[11]

By 1986, though the site was being intensively excavated, little actual treasure had been recovered, and a new owner and management team took over the operations of Sub-Sal, Inc. This new organization, under the leadership of owner John Davidson, followed in the footsteps of its predecessor by utilizing less than acceptable archaeological methodology in wrestling from the mud of Delaware Bay over 26,000 artifacts and most of the starboard hull of the ill-fated brig. What had not been found was the legendary Spanish treasure.[12]

As support for the search waned and Sub-Sal's expenditures approached $3 million, the State of Delaware found itself the custodian of the hull and guardian of the majority of artifacts, most of which had been recovered without provenance.[13]

At this juncture, in late 1986, state officials made the decision to invite experts in various fields of eighteenth and nineteenth century marine technology and maritime society to record and evaluate the items recovered from *De Braak*. The authors of this article were specifically requested to document, evaluate, and report on the nearly three hundred blocks, sheaves, and pins recovered from *De Braak* by the commercial salvagers.

Until the middle of the eighteenth century, the production of blocks and sheaves for the Royal Navy was a crude, unsophisticated affair. Made by hand, naval blocks lacked uniformity of design, quality, and durability. The importance of ships' blocks can be illustrated by the fact that a 74-gun ship required 1,400 various blocks for the running and standing rigging and for the handling of guns. Around 1756, a Southampton ships' carpenter named Walter Taylor realized that if blocks and sheaves were better constructed, there would be fewer accidents at sea. Working in secrecy, Walter Taylor and his son, also named Walter, produced some manually operated machines for the accurate sawing, boring, and turning of the various parts of a ship's blocks. In addition to development of the block-making machinery, Taylor is also credited with the development of the iron pin or axle on which the pulley revolves. This axle had formerly been made of *lignum vitae*. The Taylor iron pin was universally employed from the mid-eighteenth century onwards except for blocks used with ships' guns where sparking might cause an explosion.[14]

Walter Taylor died in 1759, but his son Walter continued his work. In 1770, Taylor blocks were used to fully rig HMS *Centaur*. Using blocks half the normally accepted sizes reduced the weight on *Centaur*'s masts by 1,300 kilograms. The Taylor family monopoly on Royal Navy blocks was assured in 1770 when a fire destroyed the block reserve at the Portsmouth dockyard. The Taylors were given the contract to restore the reserve supply. To increase production, Taylor's manually operated machines were converted to horsepower.[15]

The Taylor monopoly on blocks remained secure until the early nineteenth century. In March of 1802, England and France signed the Treaty of Amiens. The cessation of hostilities gave the Navy Board the opportunity to review its contracts, and the Taylor monopoly gave rise to questions of malpractice. At the same time, Marc Isambard Brunel approached the Navy Board with plans for steam-powered block-making machines. Brunel had offered his inventions to the Taylor family earlier, but Walter Taylor's grandson, Samuel, answered that Brunel's machines were "wholly yet untried" and that the Taylors preferred to stay with their proven techniques. In 1803,

10. PRO ADM 1/5121, Hardy to Bond, 22 July 1798; ADM *52/2725*, Log of HMS *Hind*, 17 May 1798 - 17 May 1799, 3 September to 1 October, 1798.

11. No less than eight expeditions were mounted between 1880 and 1984 to locate the remains of *De Braak*.

12. David V. Beard, "H.M.S. *De Braak*: A Treasure Debunked, A Treasure Revealed" (M.S. thesis, East Carolina University, 1989).

13. The State of Delaware has become full owner of the *De Braak* hull. Ownership of the 26,000 artifacts, including over 500 coins, is still under negotiation between the salvor and the state.

14. Gregory Clark, "Naval Blockmaking in the Eighteenth Century, *The Mariner's Mirror* 60, no. 2 (May 1976): 138.

15. Ibid.

however, the Navy Board approved the installation of Brunel's machines at Portsmouth, and by 1805, the Taylors no longer had a contract with the Royal Navy.[16]

The Royal Navy's consumption of blocks per year in the early nineteenth century has been estimated at 100,000. By 1808, Brunel's Portsmouth machines were producing 130,000 blocks per year. In Taylor's time it required 110 skilled workmen to produce the necessary blocks. Brunel's machines required only ten unskilled workers to produce the same amount.[17]

The initial scope of the *De Braak* project was to record the dimensional characteristics of the sheaves, bushings, and blocks recovered by Sub-Sal, Inc., from the *De Braak* site and thereby establish a study collection of late eighteenth century rigging artifacts. Since the salvage personnel failed to record any provenance for these artifacts, an additional objective was to establish possible usage and deployment aboard a Royal Navy brig during the era of the Napoleonic Wars. This second objective was investigated by comparing the artifacts with the widely accepted standards of the period as outlined in David Steel's 1794 *The Elements and Practice of Rigging and Seamanship*.

The artifacts were divided into three major groups — sheaves, bushings, and blocks. A fourth grouping included such miscellaneous items as pins, chain plates, washers, and gun tackle.

The sheaves were evaluated on ten separate characteristics and the results recorded on a chart developed by the investigators. In addition to these ten characteristics, limited observations were made concerning typographic characteristics of the letter and number forms as well as strike characteristics. Six characteristics were recorded for each bushing — those still imbedded in the sheaves as well as those which were unattached. The blocks were the least common of the three types of rigging artifacts recovered. Each complete and partial block was sketched, photographed, and measured.

After the characteristics of the sheaves and bushings were recorded, the charts were delivered to the Academic Computing Center of the University of Baltimore where the data was entered into a data base management system entitled "V. P. Planner." A total of 334 sheaves and bushings were entered into the software system. Thirty-two variables were recorded altogether. Initially, a complete statistical table was printed giving the description of each sheave and bushing appropriate to the specific variable. Next, eleven individual tables were developed from the primary data base in order to provide the opportunity for comparative analysis between the independent characteristics.

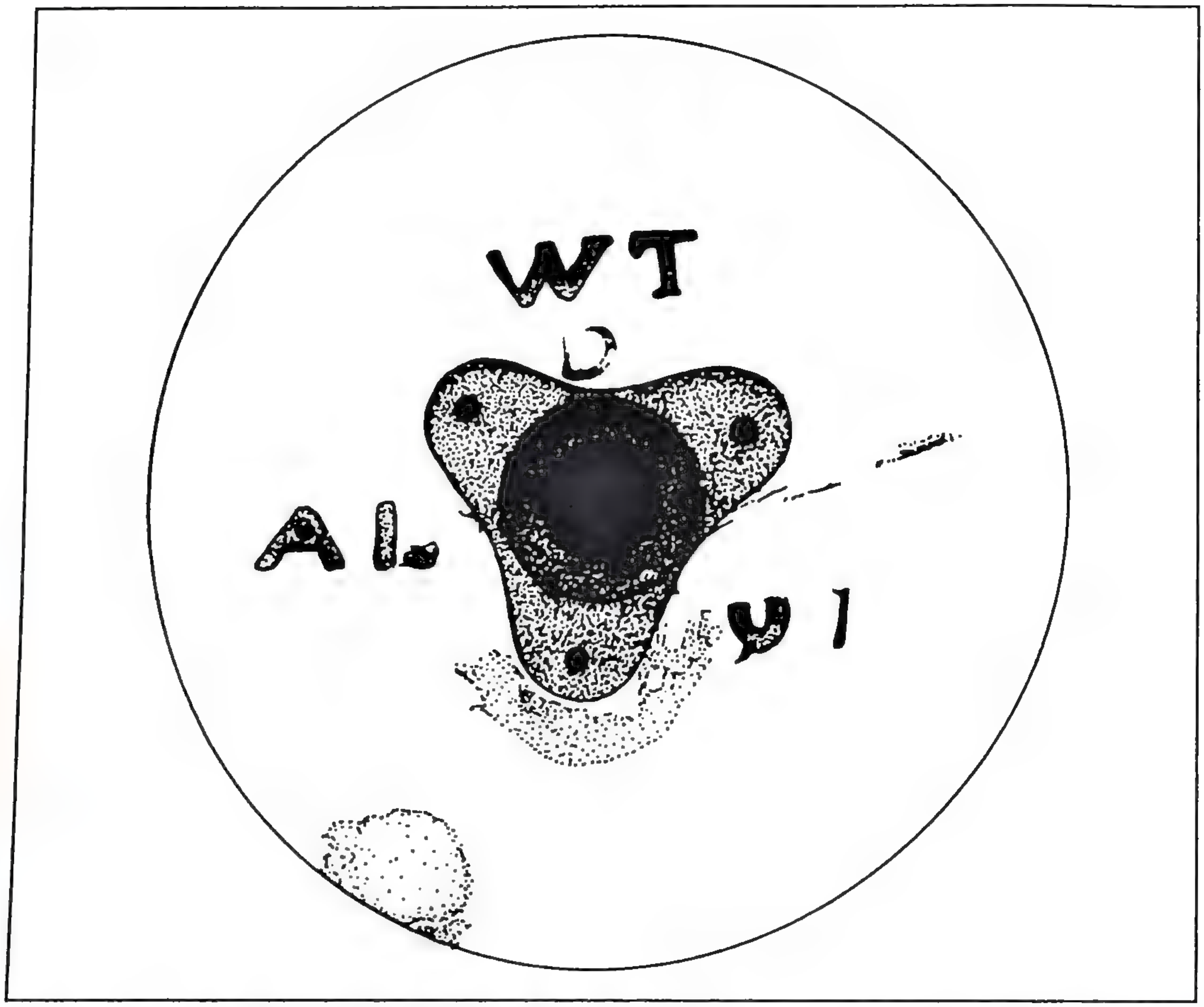
The initial step in the investigation of *De Braak*'s sheaves was to record the diameter of each sheave. Of the 262 sheaves measured, seventeen were in such a state of deterioration as to be unsuitable for evaluation. The diameters ranged from 11.3 to 1.69 inches. Steel had set forth a formula that the diameter should be five times the thickness of the sheave and the thickness of the sheave is 1/10 more than the diameter of the intended rope. So fifty sheaves were selected, using a random table of numbers, to test Steel's formula. In order to determine if there was any correlation between the actual *De Braak* sheaves and the calculated diameters according to Steel's formula, the Pearson Product-Moment Correlation Coefficient was applied to the two independent groups. The calculated Pearson's r was .4399 and the coefficient of determination was calculated at 19.35. The size of r indicated a slight relationship between the actual and calculated groups of sheaves. The coefficient of determination further indicated an approximate relationship of 20 percent. Producing a scattergram of the groups revealed that the correlation appeared to exist most strongly in sheaves ranging in diameter from 4 to 6 inches.

A second comparison with Steel was conducted in which the sheaves from the *De Braak* site were compared with the sheaves in Steel's tables for the standing and running rigging of brigs. Since Steel only records block, not sheave, size in his tables, it was necessary to convert the *De Braak* sheaves to a block size. Steel's tables list 353 blocks which contained 399 individual sheaves. From the *De Braak* site it was possible to identify 223 sheaves. Again, using the Pearson Product-Moment Correlation Coefficient, r was calculated to be .3572, indicating very slight correlation between Steel's tables and the actual *De Braak* artifacts.

In addition to the measurements, five types of markings were recorded if they appeared on the surface of a sheave. These markings included a maker's mark, month, year, place name, and the Royal Navy's broad arrow. The maker's mark usually takes some form of the name Walter Taylor. The month is generally indicated as a two letter designation. The letter "D," standing alone, appears to indicate either the Taylor factory at Deptford, England, or the Royal Navy dockyard at Deptford, which served as the grand magazine for the fleet. Charts were prepared showing the various combinations of these markings. The most common version of the maker's mark

16. K. R. Gilbert, *The Portsmouth Blockmaking Machine* (Portsmouth, England: Science Museum Monograph, 1965), p. 5.

17. Ibid., p. 2.



Sheave 86.13.1394.92 showing typical letter strikes. This sheave, featuring a Type B bushing, bears the imprint of the firm of Walter Taylor (WT); the factory or navy yard mark (D); the month of manufacture, April (AL), and the year of manufacture, 1797 (97). Although the year mark is not thoroughly impressed into the lignum vitae sheave, comparison with similar impressions confirm the numbers. The 9 has a misformed or dropped descender and the arm of the 7 is barely implied. The WT is a serifed letter form while the month is a sans serif letter form.

were the letters "WT." The size of these letters ranged from .13 inches to 1.13 inches with the most common size being .31 inches. The Deptford "D" mark sizes ranged from .25 inches to .81 inches, with sizes .31 and .44 inches being most common.

An analysis of the month marks on the sheaves revealed that of the 262 sheaves examined, only 101 were clearly inscribed with month marks. The two most common months were April and December. The positions of the various marks inscribed on the sheaves also appeared to follow a general pattern. The maker's mark usually appeared at the twelve o'clock position. The "D" mark for Deptford usually appeared at the 4:30 o'clock position while the month and year mark generally appeared at the 7:30 o'clock position. The "D" mark and the month and year marks were often reversed.

The letter, number, and broad arrow strike forms also displayed several variations. On the wood sheaves the broad arrow appears to have been created by one strike of the die. On the brass bushings, however, the broad arrow appears to have been made by three separate strikes. The letter forms on both the sheaves and bushings are serifed

in style. The letters appear to be struck into the wood sheaves but molded into the brass bushings. The letter forms on both the bushings and the sheaves approximate a late eighteenth century typeface known as Baskerville thick and thin. Some of the letter forms struck into the sheaves lack the small line used to finish off the main stroke of the letter. This form is known as "sans-serif."

Before leaving the analysis of the sheaves, one final relationship of the *De Braak* sheaves to Steel's tables was examined. The *De Braak* sheaves were compared to the tables in relation to the size line reeved through the blocks. Again Pearson's *r* was applied to the data, with the result that *r* equalled .1896, indicating there was no correlation whatsoever between the line sizes set in Steel's tables and the actual line sizes related to the *De Braak* site artifacts. In addition to the wooden sheaves, six iron sheaves were recovered, having diameters ranging from 3.88 to 1.75 inches with the capacity to handle line ranging from 3 to 1.5 inches in circumference.

The *De Braak* site yielded 280 bushings or parts of bushings in addition to the sheaves. Of these, 209 were attached to sheaves, while 71 were unsecured. Thirty-five sheaves were not fitted with bushings. The bushings were initially listed in one of ten categories, "A" through "J," based on the design of each. Category "H," however, was reserved for sheaves not fitted with bushings. As mentioned earlier, sheaves without bushings were used in gun tackle. All of the bushings appear to have been made of brass with the exception of type "J" which was a wood-iron composite. A count of the bushings by types is as follows:

Type A =	102	Type F =	4
Type B =	141	Type G =	3
Type C =	23	Type H =	35
Type D =	4	Type I =	1
Type E =	1	Type J =	1

Each bushing was measured for the diameter of its axle hole, the presence and position of the Royal Navy broad arrow, the length of the respective arms in types "A" and "B," the distance of the rivet holes from the center of the axle hole, and the distance of the various maker's marks, date marks, and broad arrows from the center of the axle holes.

Having recorded the physical features of the ten types of bushings, two tables were developed in an effort to determine if any of the bushing types appeared to be related to any particular block size or line size.

As with the sheaves, the nine bushing-sheave combinations were not able to be assigned use and position aboard the *De Braak*. Also, as with the sheaves, the nine bushing types were converted to block and line sizes. Bushing designs "A" and "B" were the only designs of significant quantity to be analyzed. Design "A" appeared most often on blocks of 9 inches or more using line from 3 to 5 inches in circumference. Design "B" appeared most often on blocks ranging in size from 5 to 9 inches using line from 1 to 3 inches in circumference.

In an attempt to explain the varying bushing designs aboard *De Braak*, these designs were compared with drawings from Steel and with drawings of bushings recovered by Roland Morris from the 1798 wreck of HMS *Colossus*. All but *De Braak* designs "G" and "I" appeared in one or another of these two references. Morris gives the explanation that the varying designs indicated experimentation on the part of the Royal Navy.[18] Before leaving the discussion of bushing types, it is interesting to note that apparently similar bushings proved not to be interchangeable among sheaves. Perhaps the bushings were cast in similar, but not exactly similar, molds at one or more foundries. The bushing size may have been altered further by the milling process. The slots in a specific sheave were then rough cut by machine and hand finished to fit the specific bushing.

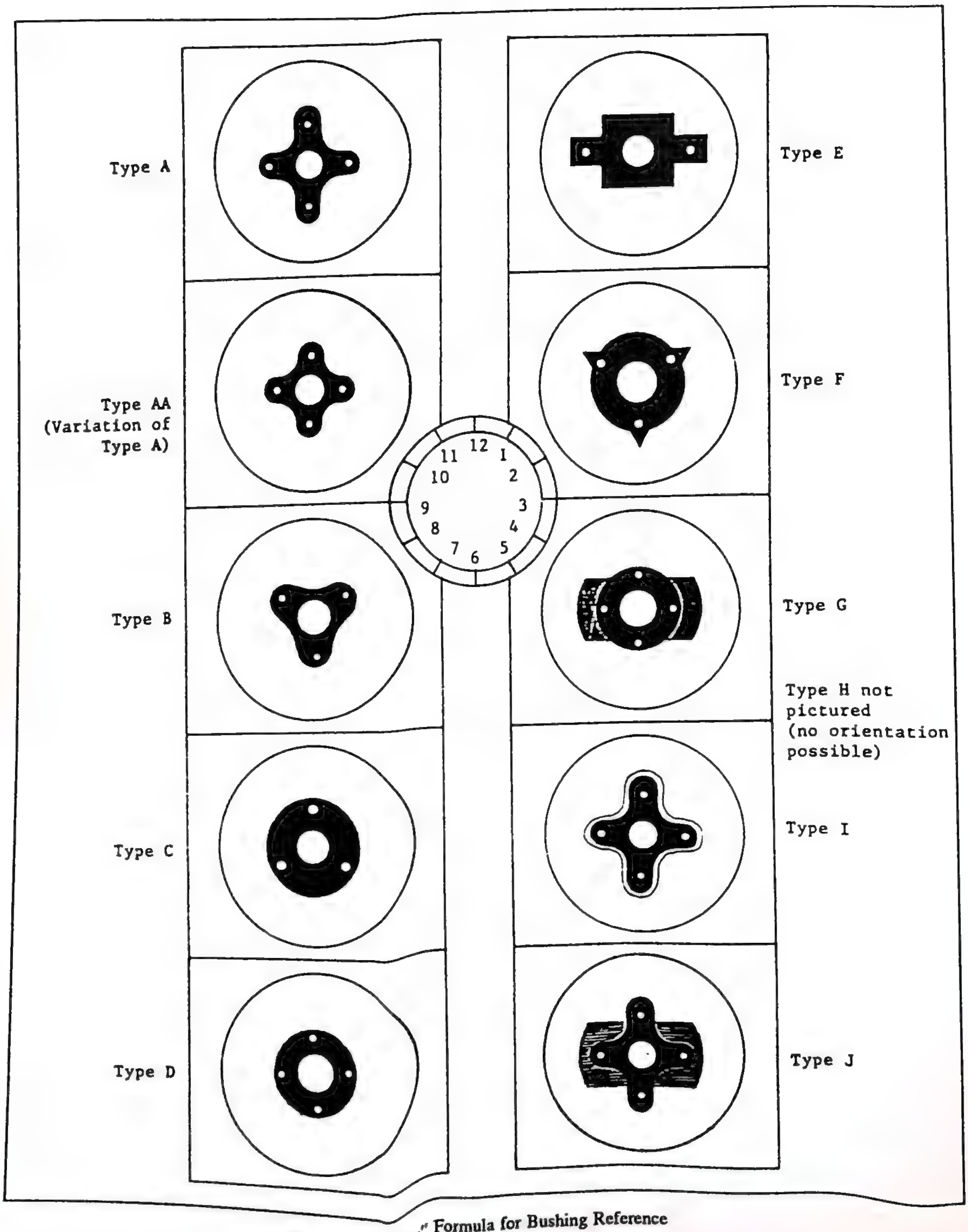
In one respect, *De Braak*'s sheaves and bushings closely resembled those described by David Steel, who discussed a special type of sheave-bushing combination called plank coaking.[19] Steel's description clearly fits the *De Braak* bushing type "G." In addition types "I" and "J" also appear to fit the description of plank coaked sheaves.

The *De Braak* site yielded a total of nineteen blocks or parts of blocks. Of this total, eleven were in such an advanced state of deterioration that little evaluation could be accomplished. The *De Braak* blocks ranged in size from 13 to 6 inches. All of the blocks which were able to be measured accurately did adhere to the formula set forth by David Steel for the proportions of blocks. However, a comparison of the *De Braak* blocks to a Steel table indicating the required sizes of rope stropping revealed that, in all cases, the *De Braak* stropping was almost double that mentioned in Steel.

One purpose of this study was to attempt to identify the artifacts used on the *De Braak*. Two 13-inch single blocks using iron instead of rope stropping were recovered

18. Roland Morris, "Finds from Scillonian Wrecks," *The International Journal of Nautical Archaeology* 13, no. 2 (May 1984): 162-3.

19. David Steel, *The Elements and Practice of Rigging and Seamanship* (London: 1794, reprint 1818; reprint, Brighton, England: Fisher Nautical Press, 1974), p. 155.



"Twelve O'Clock" Formula for Bushing Reference

from *De Braak*. Steel's tables indicate that blocks of this description were used in the main mast studdingsail gaff topping lift, the main mast studdingsail tie, the main topmast top rope, and the fore-topmast top rope. The most perfectly preserved block is a 12-inch double block still carrying its 5-inch rope strop and eye. Steel's tables list only two such blocks, and they are the main topmast sheet blocks.

The most interesting block recovered from *De Braak* was a 21-inch long, 11-inch wide, 9½-inch high, double block with a "hook" on one end. The wood sheaves were grooved for 3-inch line. Steel's tables made no mention of such a block. By chance, a similar block is mentioned in Emily Cain's *Ghost Ships*, which deals with the survey of the *Hamilton* and *Scourge*.[20] Photographs from Cain's book indicate blocks of this design being used as part of the gun tackle.

In addition to the main rigging divisions investigated, several miscellaneous items were recovered from *De Braak*. This miscellaneous category includes a 39½-inch long chain plate, four brass washers, six iron sheaves and four wood pins or axles. All of these items were measured and photographed for further study.

The researchers involved in the *De Braak* project had three major objectives. The initial objective was to record the dimensional characteristics of the sheaves, bushings, and blocks recovered without provenance from the *De Braak* site. A second was to use these dimensional characteristics to determine the usage and deployment of the artifacts, and finally, to evaluate the artifacts against the established standards of the late eighteenth century.

The investigators were successful in recording the dimensional characteristics of the *De Braak* artifacts. It was in the second and third objectives that scant success was achieved. The first table in which the sheave diameters were compared to Steel's tables indicated slight correlation between Steel and the *De Braak* artifacts. In fact, the *De Braak* sheaves appeared to be larger than required. This discrepancy may be accounted for in several ways. Perhaps the random sample was too small. In addition, Steel's tables relate to rigging, and the *De Braak* artifacts may have had a completely different provenance. Finally, it may be that Steel's tables do not apply to *De Braak* since she was a naval vessel rather than a merchant ship, and may have been over-sparred. The tables developed by the investigators comparing projected *De Braak* block and line sizes also proved that there was statistically no correlation between *De Braak* and Steel. Again, lack of provenance and a less than full complement of *De Braak* tackle could affect the calculations. As before, however, the *De Braak* blocks and lines were heavier than required by Steel, a factor which may relate to the over-sparring of *De Braak* and was perhaps a factor in her sinking.

Was there, then, any value in the attempt to analyze the bushings, blocks, and sheaves of *De Braak*? There was scant success in ascertaining the uses and positions of the artifacts or in comparing them with the standards of the period due to lack of provenance. Two rather weak hypotheses concerning over-sparring and experimental design were all that could be proposed. The real value of the *De Braak* rigging artifacts lies in the fact that they now provide the basis of a late eighteenth century study collection which will provide future researchers with actual examples against which to compare and contrast their findings.

20. Emily Cain, *Ghost Ships "Hamilton" and "Scourge": Historical Treasures from the War of 1812* (Toronto: Beaufort Books, 1983), p. 66.

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The Royal Navy's Coastal Craze: Technological Results of Strategic Confusion in the Early Ironclad Era

STANLEY SANDLER

ONLY in retrospect is it clear that the nineteenth century after Trafalgar represented a period of easy maritime supremacy for Britain's Royal Navy. Of course, this century, after 1850, did witness the most profound technological transformation in naval history, and the Royal Navy was able to forge ahead in the application of technological innovation to its warships. But at the time, each of these innovations — steam, iron, rifled shell guns, and armor — were seen as direct threats to the British Isles.[1] In addition, the very pace and profundity of these technological changes caused Admiralty officials, those naval officers who concerned themselves with such matters, and the literate public to concentrate on technical changes at the expense of strategic thought. One significant result was that although by the end of the 1860s the Royal Navy's ironclad warships were technologically far superior to those of its rivals, they came to be viewed almost exclusively as a home defense fleet.

Although the United Kingdom led all nations in industrial development at the time, the Royal Navy feared that each of the technological innovations noted above favored France. "Steam has bridged the Channel" was the cry raised in the 1840s, when France was first off the mark with that innovation. Now an invasion fleet could supposedly be surreptitiously assembled almost in defiance of wind and tide for a descent on British coasts left undefended by the luring away or the destruction of the Royal Navy far from the home shore.

For at least the next three decades, military planners and political leaders were deeply worried about Great Britain's supposed mortal vulnerability to foreign invasion.[2] In 1860 the very influential Parliamentary Defense Committee termed the Channel the "first and most obvious line of defense."[3] Lord Palmerston, Prime Minister during the introduction of the ironclad warship into the Royal Navy, asserted that the new "iron-plated ships would never be general cruisers for distant stations. They must be chiefly for home or for *stationary service*, for defense of coasts and harbours, for attacking forts or invading squadrons."[4] (Italics added by author.)

Building upon this theoretical framework, six years later the Controller of the Navy (the Admiralty officer responsible for the design of Royal Navy ships) ranked the invasion of the home islands as the primary threat for which the Navy should be prepared. For Rear Admiral Sir Robert Spencer Robinson, colonial defense was a secondary priority and commerce protection a poor third.[5] And by the end of the decade the First Sea Lord, Admiral Sir Sidney Dacres, declared that Great Britain's very existence depended on "our being able to bring into action

1. The best secondary analysis of these innovations and their impact upon the maritime powers of the time remains James Phinney Baxter III's classic *The Introduction of the Ironclad Warship* (Cambridge, MA, 1933; reprint Hambden, CT, 1968). But see also Michael Stephen Partridge, *Military Planning for the Defense of the United Kingdom* (New York, 1989); A. Lambert, *Battleships in Transition: The Creation of the Steam Battlefleet. 1815-1860* (London, 1984); C.J. Bartlett, *Great Britain and Sea Power, 1815-1853* (Oxford, 1963); Stanley Sandler, *The Emergence of the Modern Capital Ship* (London, 1979); Oscar Parkes, *British Battleships, Warrior 1860 to Vanguard, 1950* (London, 1957, reprint, 1966).

2. Baxter, *Introduction of the Ironclad Warship* and Partridge, *Military Planning*, passim.; I. F. Clarke, *Voices Prophesying War* (London, 1966), passim.

3. Minute by the Defense Committee, "Report of the Commissioners Appointed to Consider the Defenses of the United Kingdom 1860," *Parliamentary Papers* [2682], 41 (1860): 2.

4. Palmerston to Somerset, 15 December, 1860, quoted in Colin F. Baxter, "The Duke of Somerset and the Creation of the British Ironclad Navy, 1859-66," *The Mariner's Mirror* (August, 1977): 281.

5. "A General Outline of the Wants of the Navy at the Present Moment with Reference to Ships," Public Record Office, Admiralty Records (Admiralty Secretariat; hereinafter PRO ADM) 1/5981 (23 August, 1866).

such a fleet of ironclads as will keep us masters of the seas which surround our coasts. That position lost, England is out of the roll of nations."[6]

The coming of the ironclad itself reinforced the bias toward coastal defense. Again the French pioneered the new naval technology, launching the world's first sea-going ironclad, the wooden hull *La Gloire* in November, 1859. The Royal Navy followed quickly enough with the far superior iron-built, ocean-going twin ironclads, HMS *Warrior* and *Black Prince*, in December 1860 and February 1861, respectively.[7] But ironclads were expensive to build and each came to be considered a priceless national asset, not lightly risked on distant maritime ventures while Napoleon III constructed his fleet of steam and iron just across the Channel.

When the United States began to build ironclads in abundance during its Civil War, as did the Russians, the Austrians, and the Italians in the mid-nineteenth century, the traditional two-power standard had to be abandoned, at least so far as ironclads were concerned. In this new race, all naval powers started out more or less numerically equal. In the words of the First Sea Lord, Admiral Sir Alexander Milne, in a confidential memorandum of December, 1867 to the First Lord of the Admiralty, H. L. Corry:

> Before the introduction of armour-clads, it was an accepted rule that we required, and we actually maintained, a navy not far short of double that of France in order to place ourselves on relative equality with her; but at present our armourclad navy is inferior to her; and it is impossible that this can be consistent with our national safety.[8]

Admiral Milne served in the Tory Disraeli's Admiralty. But the Whig First Lord of the Admiralty, the Duke of Somerset, indicated in 1862 that ironclad supremacy over France was a goal, not a reality.[9] And Admiral Robinson remarked, after his dismissal from office in the wake of the HMS *Captain* disaster, that "in 1864 the Navy of England was not superior to that of France for fighting purposes; and . . . it was inferior to a combination of any two powers of which France was one."[10] Small coastal defense ironclads seemed a ready answer to the problem. They were cheaper and quicker to complete, and would thus go far towards widening the Royal Navy's quantitative ironclad lead.

Nonetheless, the Duke of Somerset, who presided as First Lord of the Admiralty during the introduction of the ironclad warship into the Royal Navy, planned to continue the traditional oceanic deployment of first-class warships of the Royal Navy, and forwarded a policy of sea-going ironclads.[11] The technological result of his strategic design philosophy could be seen in the *Warrior* and *Black Prince*, which enjoyed cruising ranges greater than that of any ironclad for the next ten years.

But the *Monitor-Virginia* clash of March, 1862, the first ironclad-to-ironclad battle, drastically reoriented Royal Navy strategic ironclad policy toward coast defense. *The Times* thundered that Great Britain's navy was now as obsolete as "Indian canoes," and called for the construction of a turret ship on the design principles of RN Captain Cowper Coles.[12] Somerset persisted in his

6. Memorandum by Admiral Sir Sidney Dacres, PRO ADM 1/6159 (8 August, 1870). See a similar memorandum by Admiral Thomas Symonds, PRO ADM 1/6014 (20 January, 1869).

7. For particulars on the ironclads of the 1860s see: Admiralty *Ships' Covers*, National Maritime Museum, Greenwich; *Steamships of the Navy, 1868-1864*, Admiralty Library, Ministry of Defense; "List of the Navy," 1863-1870, from MS volumes *Complete List of the Steam Ships, Steam Launches, and Sailing Ships on the List of the Navy*, same dates and depository. Unofficial but authoritative works include Oscar Parkes and Ian Sturton, eds., *Conway's All the World's Fighting Ships, 1860-1905* (New York, 1979). Valuable contemporary sources are John Scott Russell, *The Modern System of Naval Architecture*, 3 vols. (London, 1865); Edward James Reed, *Our Iron-Clad Ships: Their Qualities, Performances, and Cost* (London, 1869); the magnificent *Transactions of the Institution of Naval Architects*, vols. 2-14 (London, 1862-1873); Edward Simpson, *Report of a Naval Mission to Europe*, 3 vols., (Washington, DC, 1873); Chief Engineer J. W. King, USN., *The Warships and Navies of the World* (Boston, 1880); Lt. Thomas Very, USN, *The Navies of the World* (New York, 1880); Sir Thomas Brassey, *The British Navy: Its Strengths, Resources, and Administration*, vols. 1 and 3 (London, 1882, 1883), and Admiral G. A. Ballard's irregular series of informative articles on ironclads of the 1860s, *Mariner's Mirror* 15-21 (1929-1935), combined and edited as *The Black Battlefleet* (Annapolis, MD, 1980). Subsequent references to ironclad particulars will be based upon *Ships' Covers* or Parkes and Sturton, unless otherwise cited.

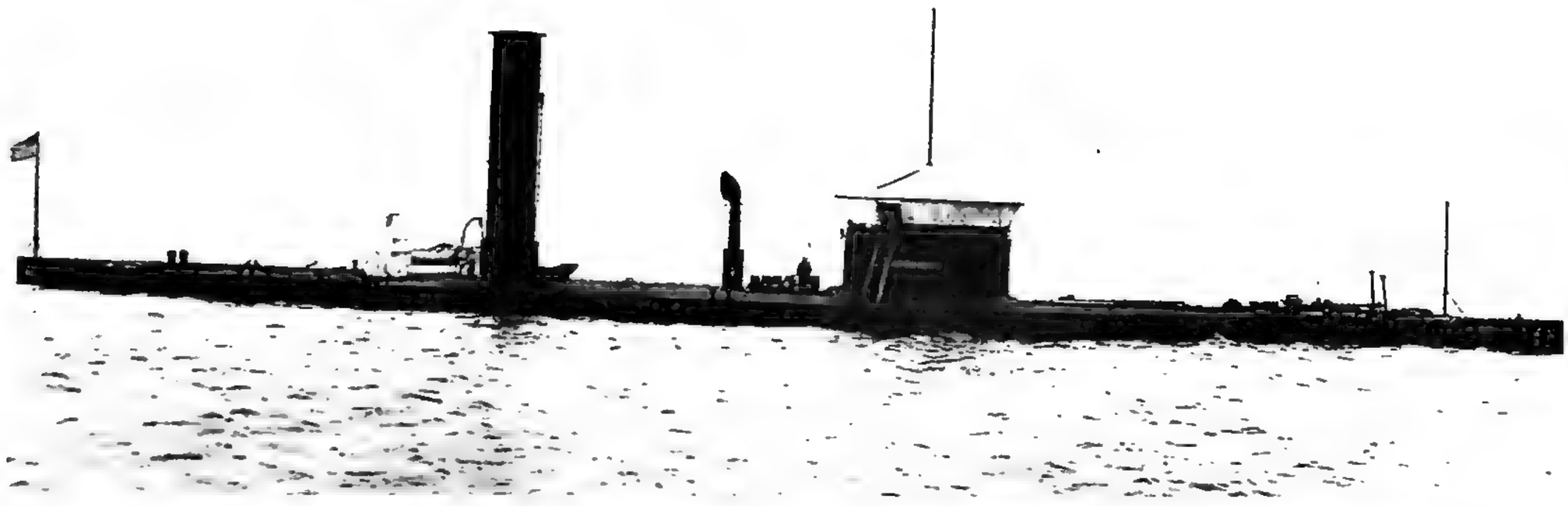
8. Confidential paper, December, 1867, Milne MSS, MLN/P/b 1cc., National Maritime Museum, Greenwich. Rear Admiral Lord Clarence Paget, who had served as Admiralty First Secretary in the Duke of Somerset's second administration, wrote a decade later that the opinion was common in the 1860s that steam and iron had been "levelling up the naval powers," and that Great Britain could have lost her power through one great naval disaster. Paget, *Naval Powers and Their Policies* (London, 1876), p. vii.

9. Somerset to Palmerston, 23 May, 1862, Palmerston MSS. Printed in a confidential Cabinet memorandum dated 16 June, 1862.

10. Sir Robert Spencer Robinson, *On the State of the British Navy* (London, 1874), p. 5.

11. The strategic ironclad policy of the Duke of Somerset can be found in Baxter, *Introduction of the Ironclad Warship*, passim.

12. *The Times* 1 April, 1862; quoted in Baxter, p. 282. Charles Francis Adams, American Minister to the Court of St. James, informed his son that the *Monitor* was now the "main talk of the town." Ephraim D. Adams, *Great Britain and the American Civil War*, 1 (New York, 1925): 176. See also S. A. Wallace and Francis E. Gillespie, eds., *The Journal of Benjamin Moran* (Chicago, 1949), passim.



USS *Canonicus*, a typical Federal monitor of the 1860s. U. S. Navy photograph, courtesy of the Office of Naval History, Washington, DC.

conviction that the Navy's ironclads should be able to cruise the oceans. But influential opinion was against him, beginning with Queen Victoria and Prince Albert.[13] (Not coincidentally, the Royal Navy's first two turret ships, which were useful only in coast defense, were christened *Prince Albert* and *Royal Sovereign*.) With the Duke's appointment of Edward James Reed in 1863 as Admiralty Chief Constructor, the Royal Navy turned increasingly to "moderate dimensions," the turret, and coast defense.[14]

Non-technological concerns also pushed the Royal Navy into a coast defense posture in the 1860s. Perhaps the most important was the lack of strategic planning of the time. Imperial, colonial, or commercial defenses, as well as the protection of the Home Isles, were apparently never studied in any systematic manner. The Principal of the School of Naval Architecture, for example, assured his readers that such a study must exist somewhere, but that he was unaware of it.[15] And as late as 1899, the First Lord of the Admiralty, George Goschen, conceded that "there is not now, nor has there ever been, an established school for the study of strategy . . . ," and did not appear worried by this lack.[16] The 1860s were uniquely fertile years for the development of ironclad technology, but not for its employment, either tactically or strategically. In the words of one authority on the subject, "Political and even naval lords were apt to regard planning for war with the jaundiced eye of a Victorian bishop viewing a popular Millenarian movement."[17]

Of course, the Royal Navy could not totally ignore its commerce and colonial protection duties. But, as noted above, the Admiralty refused to risk first-class ironclads far from home shores. Until the late 1860s, Admiralty policy was to dispatch only the converted wooden-hulled

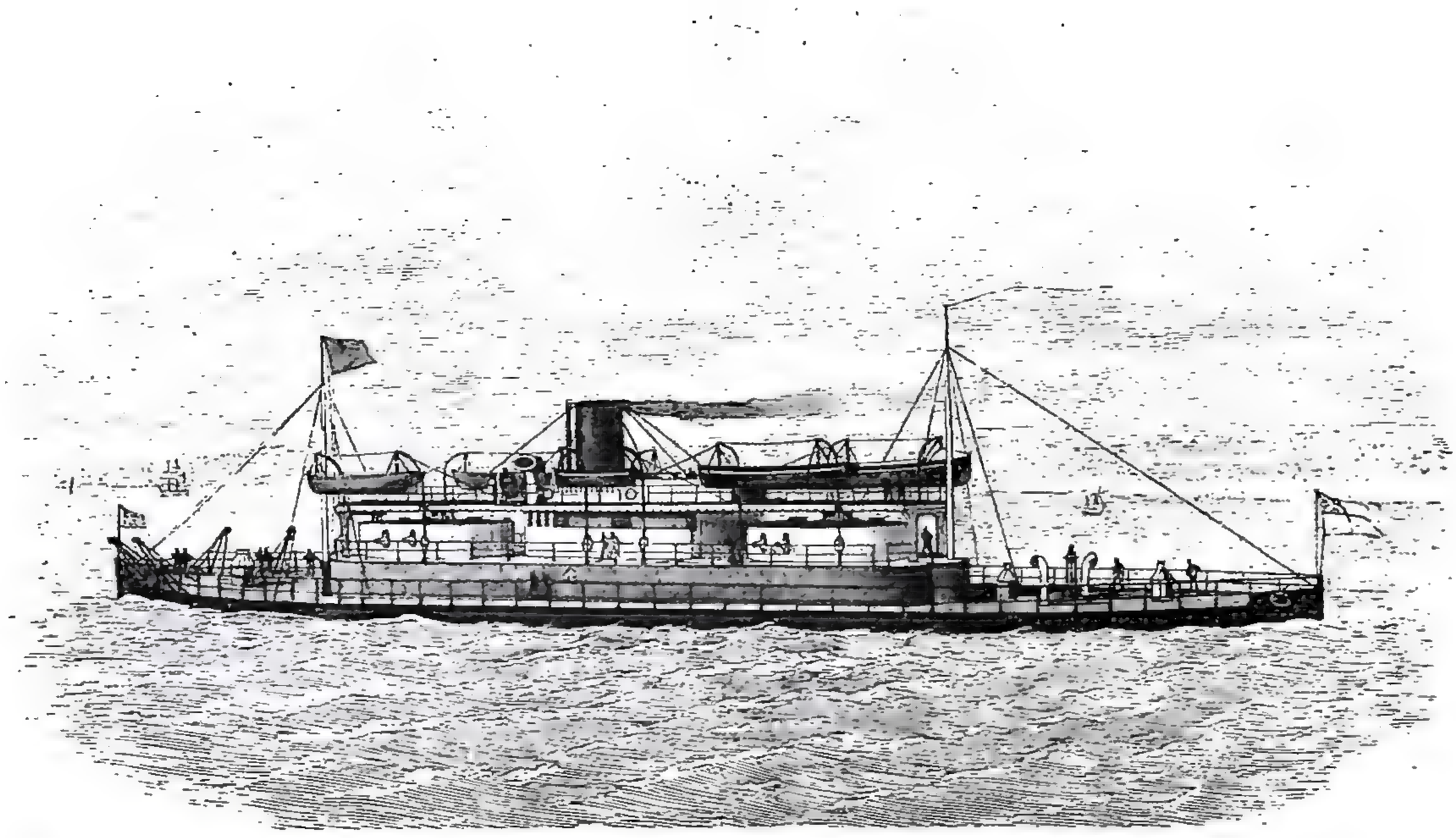
13. Baxter, *Introduction of the Ironclad Warship*, p. 282. At a time when the widowed and deeply grieving Queen Victoria was provoking criticism by her withdrawal from public life, the monarch nonetheless visited the newly-launched *Royal Sovereign* and presented Captain Coles with her ultimate accolade, a bronze statuette of the late Prince Consort. *The Times*, 30 June, 9 August, 1864. John Scott Russell went so far as to assert that the entire turret ship idea had originated with Prince Albert, long predating Ericsson or Coles, but that the prince had "magnanimous[ly] . . . ceded the whole public credit to Captain Cowper Coles who also had done the same thing in a somewhat different way," quoted in Parkes, *British Battleships*, p. 45.

14. The Duke of Somerset was undoubtedly reacting to the great costs of the *Minotaur* class, enormous broadside ironclads which, however, had markedly reduced radii compared to the *Warrior* class. In referring to Reed's appointment, Somerset explained that he "was convinced that there must be means of obtaining shorter vessels with the necessary flotation, and I therefore resolved to bring in a new person and charge him with this construction." *Hansard's Parliamentary Debates* 175 (1867): 130.

15. C. W. Merrifield, "A Review of the Present Conditions of Naval Design," *Annual of the School of Naval Architecture* (January, 1872), p. 34.

16. *Hansard's Parliamentary Debates* 79 (1899): 1362.

17. N. A. M. Rodger, "The Dark Ages of the Admiralty, 1869-1885," Part 1, *Mariner's Mirror* (November, 1975): 36.



HMS *Cerberus*, a Royal Navy coastal defense dwarf turret ironclad. Courtesy of the National Maritime Museum, Greenwich.

ironclads to distant stations such as China or North America. But these warships were lumbering fire-traps lacking watertight compartmentation, and even at the time were considered temporary expedients.[18] The Admiralty also laid down several unarmored fast cruisers for commerce protection against the anticipated American "super-Alabamas," which never really materialized. These cruisers were almost as expensive as ironclads, however, and few were built.[19]

British colonies found first-class ironclad protection beyond their resources. But the governments of India and Victoria did make some provision for their defense: three dwarf mastless harbor defense turret ironclads. These led "idle and uneventful" lives guarding Bombay (*Abyssinia*, *Magdala*) and Melbourne (*Cerberus*) until the early twentieth century.[20]

In the only realistic approach to the problem of overseas naval protection, and in the only exception to the

18. See Admiral Robinson to Board of Admiralty, PRO ADM 1/5840 (11 February, 1863) and 1/6138 (3 February, 1869); Parkes, *British Battleships*, pp. 49, 84, 108; and Ballard, *The Black Battlefleet*, pp. 115-143. A consideration in favor of the wooden-hulled ironclads was that they presented a much less severe fouling problem; with a wooden hull, copper plates, which provided a smooth surface to which marine plants and animals had difficulty attaching, needed merely to be fastened to the wood. But copper fastened to iron produced a galvanic action that soon wore and pitted the iron, resulting in bottoms that resembled "a lawyer's wig." (Baxter, *Introduction of the Ironclad Warship*, p. 283). One solution was to separate the copper and iron plates with two layers of wood. But this was so expensive that as late as 1863 the First Secretary to the Admiralty Board was driven to assert in Parliament that wooden construction would almost be preferable. *Hansard's Parliamentary Debates* 169 (1863): 676. See also Parkes, *British Battleships*, p. 160; Reed, *Our Iron-Clad Ships*, p. 78; R. Mallet, "On the Corrosion and Fouling of Iron Ships," *Transactions of the Institute of Naval Architects* 13 (1872).

19. The Admiralty Board First Secretary, Lord H.A. Lennox, frankly informed Prime Minister Disraeli that the new unarmored cruisers "are designed to protect our commerce in case of a rupture with America." Lennox to Disraeli, 27 October, 1866, Disraeli MSS, Hughenden Archives, B/XX/LX/43. As early as 1864, Viscount Palmerston had worried that the Americans might, in the aftermath of the *Alabama*, launch "a swarm of fast steamers . . . speedy enough to escape from our cruisers, and strong enough to capture any merchantman." Palmerston to Duke of Somerset, 6 September, 1864, Somerset Papers.

20. Parkes, *British Battleships*, pp. 166-170; Ballard, *The Black Battlefleet*, pp. 218-219.

Royal Navy's home waters orientation, the Admiralty deployed in the early 1870s the six second-class box-battery *Audacious* class ironclads to distant stations. Yet this bold naval venture would not be repeated for a decade.[21]

Any rationale for blue-water ironclad projection was weakened by the declining maritime strength of the only transoceanic ironclad naval power, the United States.[22] Despite some initial popular hysteria, Admiralty officials quite soon were made well aware of the technical limitations of the Federal ironclad monitors and the impracticability of their fighting in any sort of a heavy sea. Reports from North America during the Civil War proved almost uniformly uncomplimentary to the monitors. Admiral Milne went so far as to conclude that "the monitors as a class are failures."[23] By 1866 the Foreign Office could inform the Admiralty that its naval attaches had concluded that the United States was "without armored vessels fitted for cruising at sea, and that they are unprepared even for their construction."[24] Thus ended rather quickly any credible transoceanic ironclad threat, as well as another incentive for ocean-cruising RN ironclads.

Another non-technological impetus to coast defense in the decade was the decided lack of support for the Admiralty by both Whig and Conservative governments. Prime Minister Benjamin Disraeli, for example, drew up the 1868 Navy estimates without even informing the First Lord of the Admiralty, and a few months earlier had railed that "It is useless to reason with them [the Admiralty]; you must command. The whole system of administration is palsied by their mutinous spirit."[25] As late as 1875 naval construction estimates calling for six cruisers were entirely deleted by the Chancellor of the Exchequer, who did not bother either to inform or consult with the Board of Admiralty.[26] Sir John Briggs, Chief Clerk of the Admiralty for forty-four years, wrote that during his entire term of office only one First Lord, Sir James Graham (1830-34; 1852-55) had any Cabinet support.[27] A thorough perusal of Admiralty and governmental records and private papers strongly indicates that, with the possible exception of Lord Palmerston at the beginning of the 1860s, any interest by political leaders in naval matters during the early ironclad era was almost entirely economical. Such attitudes were reinforced by the inveterate cheese-paring economy practiced across the political spectrum. Gladstone, for reasons of economy, seemed to have envisioned the Royal Navy almost entirely as a coast defense force.[28] The costs of the new ironclads were appalling compared to their wooden predecessors. Small, armored, mastless coast defense warships were seen as worthwhile substitutes that could be built on average for half the cost of first-class ironclads and yet secure the safety of the home isles.[29]

21. In addition to Admiralty *Ship's Covers*, see also testimony by Admiral Robinson before the Parliamentary Committee on Designs, *Parliamentary Papers* 14 (1872), pp. 169-170, 316; Parkes, *British Battleships*, pp. 150-159; and Ballard, *The Black Battlefleet*, pp. 171-189.

22. John Ericsson certainly held high hopes for his monitors. Writing to the Assistant Secretary of the Navy five days after the Battle of Hampton Roads, he exalted that "swift and impregnable turret carrier[s] could send a message to England and France. Leave the Gulf! We do not want your kings and monarchical institutions on this continent." Ericsson to Fox, 13 March, 1862, Fox MSS, New York Historical Society, New York, N.Y. But by 1870, the inventor publicly conceded that the Royal Navy's mastless war engines, HMS *Devastation* and *Thunderer*, could, with their enormous range, "steam up the Hudson in spite of our monitors, and dictate terms off Castle Garden." Letter from Ericsson in *Engineering* (18 February, 1870). (Evidently Ericsson knew considerably more about naval architecture than the geography of his own New York City: how could any warship steam *up* the Hudson to dictate terms off Castle Garden, which was at the tip of Manhattan?) To date, little scholarly research has been carried out on the Federal ironclads of the 1860s since Frank M. Bennett's *The Steam Navy of the United States* (Pittsburgh, 1897), *The Monitor and the Navy Under Steam* (Boston, 1900), and J. P. Baxter's pioneering *The Introduction of the Ironclad Warship* (Cambridge, MA, 1933, 1968). See also Department of the Navy, *Dictionary of American Naval Fighting Ships*, 3 (Washington, D.C., 1968); typescript, "Our Navy's Ships and Their Builders, 1775-1885" ("With the Approval and Cooperation of the Bureau of Ships, U.S. Navy, Washington, D.C.,1962"); Arnold Shapak, "Oak to Iron — Monitors in United States Naval History," (M. A. thesis, University of Maryland, 1973); and Naval History Division, Department of the Navy, *Monitors of the U.S. Navy, 1861-1937* (Washington, D.C., 1969).

23. Admiral Milne, "Memoranda Relative to the Civil War in America," PRO ADM 1/5871 (15 March, 1864). Captain Vansittart to Admiral Milne, PRO ADM 128/60 (10 December, 1862); Captain R. Vesy Hamilton and Kennedy to Board of Admiralty, PRO ADM 1/5820 (13 July, 1863). Disraeli bluntly noted that "the Americans have no navy, and not an ironclad except for coast defense." Disraeli to Lord Derby, 28 January, 1868. For contemporary U.S. Navy doubts about its own monitors, see United States Executive Department, *Armoured Vessels in the Attack on Charleston* (Washington, DC, n.d. [ca.1863]).

24. Foreign Office to Admiralty, PRO ADM 1/5992 (6 December, 1866). See also Foreign Office, "Occasions in the Civil War in America on which Forts and Guns have had the Best of it against Iron-Clad Ships," Palmerston MSS, National Registry of Archives, London, 24 June, 1863.

25. First Lord of the Admiralty, H. L. Corry to Disraeli, 11 January, 1867, Disraeli MSS, Hughenden, B/XXII/C442. G. E. Buckle, W. F. Monypenny, *The Life of Benjamin Disraeli, Earl of Beaconsfield*, 5 (London, 1916): 478.

26. Rodger, "The Dark Ages of the Admiralty," Part 2, *Mariner's Mirror* (February, 1976): 37

27. Sir John Briggs, *Naval Administration* (London, 1897), p. xxi.

28. Gladstone MSS, British Library, 1862-1871; Baxter, *Introduction of the Ironclad Warship*, pp. 282, 283.

29. Estimates, Navy, *Parliamentary Papers* 35 (1863): 1; 37 (1864): 1; 35 (1865), part 1: 1; 45 (1866): 1; 44 (1867): 1; 45 (1867-68); 37

Finally, the British public itself seemed to demand coastal protection. "Hippophlax" painted in *The Times* a lurid picture of enemy dragoons disembarking from a fleet that had just destroyed or decoyed the Royal Navy, and carrying off the squire's daughter on their way to London. Once there, the ruthless troopers would methodically burn down metropolitan neighborhoods until an astronomical ransom was paid.[30] More sober voices, such as that of *Nautical Magazine*, which spoke for the merchant as well as the Royal Navy, feared that:

> . . . on a sudden outbreak of war our great ports of trade would be perfectly at the mercy of any daring fellow, who, with a good ship under him, a daredevil crew and the prospect of "loot," should make a dash into any one of them; and after loading his vessel, and perhaps two or three others with booty, escape before we can summon a force to resist him.[31]

It is difficult to determine to what extent Admiralty planners were distracted by these imaginative public scenarios of sudden disaster along the coast. But no less than one-third of Royal Navy ironclads constructed or purchased in the decade of the 1860s were of coast defense configuration. Furthermore, from 1863 to 1871 a mere five RN ironclads were stationed on the Pacific, North American and West Indies, and China stations. And these were all second-class vessels. The Royal Navy's ironclad fleet of the 1860s was essentially a home guard.

Earlier in the decade the Royal Navy's Controller had designed ironclads of "moderate dimensions" as much for reasons of economy and to test the turret ship theories of Captain Cowper P. Coles, as for coast defense. But by 1869 he was urging the Admiralty to abandon the "showy" qualities of high speed and great coal capacity in favor of the ram, armor, and ordnance, qualities more suited to the coastal waters of the home isles than to oceanic cruising.[32] To supplement its first-class, short-bunkered sailing ironclads, the Admiralty now commenced to order or purchase armored warships designed exclusively for coast defense. The result was a series of the most unsatisfactory ironclads in the history of the Royal Navy. The first of the lot, HMS *Glatton*, labored under the lowest freeboard of any warship in the Royal Navy, a severe enough disability in the tempestuous waters surrounding the British Isles. Yet her deep draft also precluded operations in shallow coastal waters.[33] In 1870, four mini-*Devastations* — the *Hydra, Gorgon, Hecate,* and *Cyclops* — were ordered in the wake of the Franco-Prussian war. Even their designer, the Admiralty Chief Constructor Edward James Reed, described the class as "far less terrible vessels than their formidable names would suggest," and a twentieth century authority characterized them as nothing less than "the most unsatisfactory group of ironclads ever to fly the White Ensign."[34] These unseaworthy lilliputian ironclads suffered from a freeboard almost as low as the *Glatton*'s. The coast defense craze had reached such a pitch by 1871 that Reed advanced serious proposals for *reduced* versions of the *Hydra* class that could be manned by "artillerymen" or "volunteers" during hostilities and then hauled up on shore in peacetime to save money.[35]

To compound this strategic confusion, the ram, that "ever-loaded weapon," was added to all Royal Navy ironclads for the rest of the century, and in exaggerated form to coastal ironclads. The resulting HMS *Hotspur* and HMS *Rupert* were not only useless because of their deep draft, like HMS *Glatton*, but their lack of maneuverability

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(1868-69): 1. This information was collected in *Navy Estimates*, Admiralty Library, for each year. See also C. J. Bartlett, "The Mid-Victorian Reappraisal of Naval Policy," in *Studies in International History*, ed. K. Bourne and D. C. Watt (London, 1967). Oscar Parkes is a convenient source for individual ironclad costs.

30. *The Times* 29 November, 1866, p. 6. See also Capt. A. B. Tulloch, "On the Protection of London against an Invading Force Landing on the East Coast," *Journal of the Royal United Services Institute* 14 (1870): 357; Lt. Col. F. J. Sody, "Observations on the Defense of England," Ibid., pp. 570-584. Much of this invasion hysteria is analyzed in Clarke, *Voices Prophesying War*, pp. 30-63.

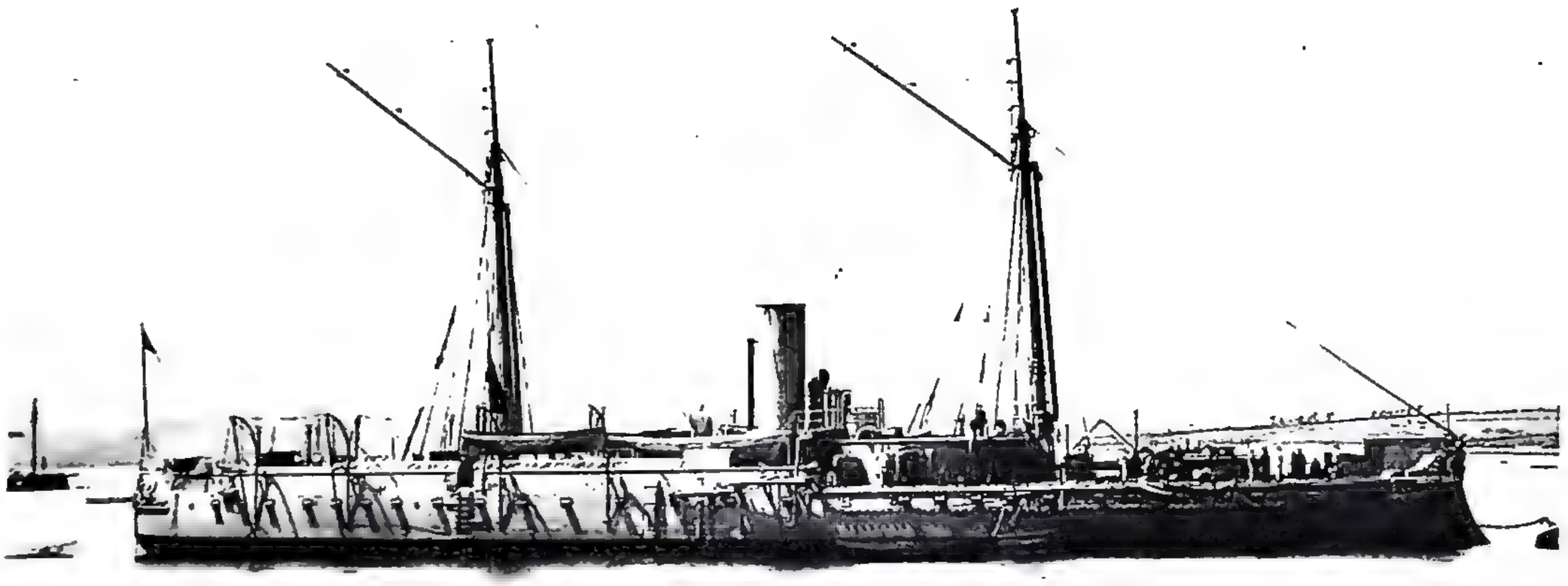
31. "Our Unprotected Harbour and Coast Defenses," *Nautical Magazine* 40 (1871): 281. See also *The Standard* 21 (August, 1866): "The enemy might send out one or two fleets for the special purpose of occupying the attention of our large ships while his monitors run up the Thames and lay London under tribute." *The Naval and Military Gazette* hawked even more far-fetched fantasies (21 March, 1868). See also P. Barry, *Dockyard Economy and Naval Power* (London, 1863), p. 163; and W. Drummond Jervois, *The Defensive Policy of Great Britain* (London, 1871), p. 11.

32. Admiralty, "Précis of Correspondence Between the Admiralty and Captain C. P. Coles," PRO ADM 1/6108 (7 June, 1869); Robinson to Board, PRO ADM 1/6138 (3 February, 1869).

33. The *Glatton*'s designer, Edward Reed, claimed that the vessel "had to be produced in conformity with ideas which were not those of the designer." Reed, *Modern Ships of War* (London, 1889), p. 16.

34. Reed, *Modern Ships of War*, p. 34; Parkes, *British Battleships*, pp. 212-215. For a defense of these warships, see N. Barnaby, "Modern Ships of War," *Journal of the R.U.S.I.* 16 (1872): 67 (Barnaby was Reed's successor as Admiralty Chief Constructor); and Ballard, *The Black Battlefleet*, pp. 218-219.

35. Reed, *Our Naval Coast Defenses* (London, 1871), passim., and *Broad Arrow* (20 May, 1871), p. 611. This absurd theme was taken up by the influential *Blackwood's* in "The British Navy, What We have, What We want," (March, 1871), p. 373. John Ericsson proposed a similar scheme for the U.S. Navy as early as 1862. Ericsson to Fox, (21 April, 1862), Fox MSS, New York Historical Society.



HMS *Hotspur*, a Royal Navy *masted* coast defense ironclad. Courtesy of the National Maritime Museum, Greenwich.

combined with their underwater snouts to menace any unaware consort.[36]

Just after the Franco-Prussian War, Admiral Milne noted that Napoleon III's oceanic fleet had proven singularly powerless against the Prussians. The First Sea Lord therefore called for more *Hydras* to meet a similar contingency in case of war with Russia. Admiral Milne probably also had in mind the success of the Royal Navy's first armored warships, the coastal "Kinburn batteries," against Russian forts along the Black Sea during the Crimean War. But the admiral failed to acknowledge that it was the sea-going Royal Navy that made it possible to tow the Kinburn batteries safely to Russian coasts in the first place.[37]

Although the earliest turreted coast defense ironclads gave some useful service by validating the turret concept, for the most part these warships were a waste of money. HMS *Rupert*, for example, cost about £240,000 and would have been useful only in, literally, restricted circumstances. For only about £130,000 more, the Royal Navy could have built another *Devastation*, a mastless war engine with transatlantic as well as coastal capabilities. In fact, the economy argument for coastal ironclads is undercut by the realization that the entire *Devastation* class (*Devastation*, *Thunderer*, and *Dreadnought*) cost somewhat less to build than all of the Royal Navy's coastal defense ironclads.[38] Three additional *Devastations* would have given the Royal Navy a practically unassailable technological lead over all of her possible naval rivals combined. And they could have protected the home waters of the British Isles far better than the dwarf coastal ironclads.

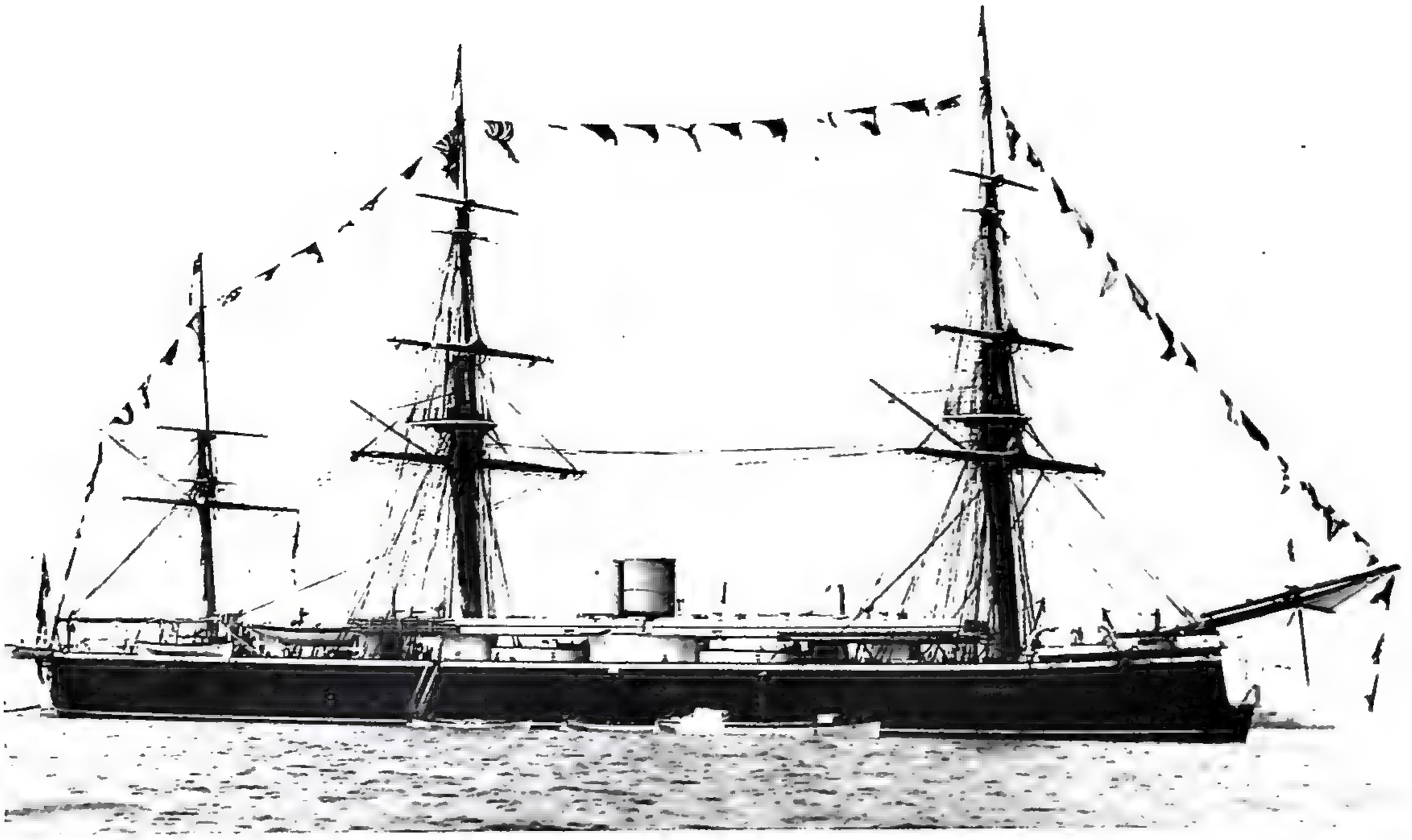
Even the *Devastations* that were built, and upon which truly rested the defense of the United Kingdom, were delayed by the coast defense program. In 1868 the First Lord of the Admiralty, Hugh C. E. Childers, determined to retard work on the class in order to forward construction of the Navy's coastal rams.[39] *Devastation*'s

36. For the impact of the ram on the naval powers in the early ironclad era, see R. L. Johnson II, "Rise and Fall of a Tactic: The Ram in Nineteenth Century Naval Doctrine," M.A. thesis, Texas A&M University, 1989; Sandler, "The Day of the Ram," *Military Affairs* (December, 1976).

37. Milne to Board, 5 February, 1873, Milne MSS, MLN P/B/1(c). See also the article by the noted naval architect William Fairbaim, "The Present and Past Construction of the Navy," for an explication of the need for coast defense ironclads. *Transactions of the I. N. A.* 12 (1871): 208-211.

38. See Admiralty, *Steam Ships of the Navy (1868-1884)* and *Ships' Covers*.

39. Childers to Gladstone, Gladstone MSS, 19 December, 1870,



HMS *Monarch*, a Royal Navy ocean-cruising, masted turret ship. Official U. S. Navy photograph, courtesy of the Office of Naval History, Washington, DC.

sisters, *Thunderer* and *Dreadnought*, thus took seven years to complete and were robbed of much of their value by the date that they entered service.

Probably the only truly valid argument in favor of the RN's coastal defense emphasis, admittedly offered in hindsight, is that of the condition of marine engineering at the time. Although marine propulsion machinery improved in efficiency throughout the 1860s, all such machinery in RN ironclads was horizontal. This arrangement protected the engines by keeping them below the waterline, but also ensured that the heavy reciprocating parts constantly wore down bearing surfaces.[40] Consequently, as late as 1870, no Royal Navy ironclad steaming at full speed could reach even Gibraltar without suffering a mechanical breakdown.[41]

Yet even this argument weakens with the realization that every first-class RN ironclad of the decade carried a towering wind trap that gave it oceanic capacities, with or without the use of its engines. The first-class turret ironclad HMS *Monarch*, for example, using steam and

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Add. MSS 44128, f. 197. Admiral Robinson had earlier agreed that thereby "We should get four ships instead of two," Robinson to Admiral Dacres, 6 August, 1870, Milne MSS, MLN/P/B/1. (The masted, sea-going turret ironclad HMS *Captain* capsized that night.)

40. Vice Admiral Sir Henry Oram, "Fifty Years' Changes in British Warship Machinery," *Transactions of the I. N. A.* 52 (1911): 98-101; Oram and Richard B. Sennet, *The Marine Steam Engine* (London, 1900), pp. 10-13; K. T. Rowland, *Steam at Sea* (New York, 1970); Ballard, "The Black Battlefleet," *Mariner's Mirror* 15 (1929): 111-115. All of the sailing ironclads of the 1860s were equipped with either a freely revolving or a hoisting screw for sailing. The latter device was usually combined with a collapsible funnel. Hence the rather bizarre preparatory command for sailing, "Down Funnel, Up Screw" (and vice-versa for steaming). See G. Penn, *Up Funnel, Down Screw* (London, 1955); Ballard, "British Battleships of 1870," *Mariner's Mirror* 19 (1933): 265.

41. Ballard, "The Black Battlefleet," p. 112; and "Turret Ships," Part 1, *Colburn's United Service Magazine* (1866): 93. Arthur Marder claims that every day's steaming at high speed with reciprocating engines, even much later in the century, resulted in several days' overhaul of machinery in harbor. *From the* Dreadnought *to Scapa Flow*, 1 (London, 1961): 43-44.

sail, cruised uneventfully to New York in 1869, bearing the corpse of the American philanthropist George Peabody in a goodwill gesture.[42]

Withal, no contemporary criticism of the Royal Navy's coastal program seems to have been levied after 1862, when John Scott Russell, designer of HMS *Warrior*, insisted that "money spent in guns or ships that are unfit for ocean service is so much money thrown into the sea."[43] But Russell's was a lonely critique.

After 1870, however, the Royal Navy would lay down only two more coast defense ironclads.[44] Admiralty records and contemporary publications are remarkably vague as to the reasons for this major shift in construction policy. Informed speculation indicates that the Admiralty felt far less threatened by invasion after the destruction of Napoleon III's Second Empire. The focus of the rebuilt French ironclad fleet was now on *revanche* against Germany. The American monitors were by 1870 in an advanced state of decay,[45] and the ironclad fleets of Austria, Russia, and Italy hardly posed a mortal threat. Although its creative burst of technical application was exhausted during the subsequent "Dark Ages of the Victorian Navy" (ca. 1871-1889),[46] the Royal Navy after 1871 once again commenced only to build ironclads that, for all their faults, could at least cruise and fight beyond home waters.

42. Ballard, *The Black Battlefleet*, pp. 87-97. The sailing of the ironclads of the 1860s is discussed in Ballard, "British Battleships of 1870," p. 265, and throughout his series of articles 1929-1935. See also testimony and calculations of Nathaniel Barnaby, Reed's successor, before the Committee on Designs, App. E, 14 (1872): 342.

43. John Scott Russell, *The Fleet of the Future, 1862* (London, 1862), p.40. A year earlier the *Cornhill Magazine* had criticized coastal ironclads in "On a Further Reconstruction of the Navy," (December, 1861), p. 718.

44. These were HMS *Conqueror* and *Hero*, completed in 1886 and 1888, respectively. It is somewhat unclear as to whether these two small turret ships were designed as coastal defense vessels or simply reflected the naval design trends of the time, which emphasized economy as well as protection and handiness for ramming and counter-ramming. See *Ships' Covers*; Parkes, *British Battleships*, pp. 293-296. Parkes termed them "two of the most useless turret ships ever built," (p. 294). The Royal Navy also purchased two ex-Turkish coastal rams built in British yards during the Russian War scare of 1877. Vice Admiral Philip Colomb accurately noted that they represented "the expression of despair over the idea of any recognized method of fighting at sea." Ibid., p. 267.

45. S. Sandler, "A Navy in Decay: Some Technological-Strategic Results of Disarmament in the U.S. Navy, 1865-1869," *Military Affairs* (December, 1971).

46. Parkes, *British Battleships*, pp. 230-233. The characterization was taken up by Roger in "The Dark Ages of the Victorian Navy," parts 1 and 2; and for the U.S. Navy for the same period, by D. C. Canney, *The Old Steam Navy* 1 (Annapolis, MD, 1990): 145-166.

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". . . Defended by an Adequate Power"*: Joshua Humphreys and the 74-Gun Ships of 1799

RICHARD EDDY

DURING the Federalist period of our nation's history, several conflicting forces shaped the building of the new country's first naval vessels. The agrarian interior, the commercial eastern seaports, and the apprehensive south all had their political, financial, and diplomatic perspectives, which affected the men who would support or deny the existence of such ships and all they meant for the future. The members of the early Congresses were involved not only in establishing the country but also in viewing the potential threats and promises facing it.

Early in the Federalist period, such concerns appeared in the literature of *The Federalist*, whose authors Alexander Hamilton, James Madison, and John Jay used the pamphlets to present their justification for ratification of the Constitution. Hamilton was foremost in presenting his beliefs favoring a strong central government, and he likewise stressed repeatedly the need for a national naval force. On 18 December 1787, he wrote:

> . . . that the union ought to be invested with full power to levy troops; to build and equip fleets, and to raise the revenues which will be required for the formation and support of an army and navy . . . .[1]

Very shortly thereafter, Hamilton went on to show that he believed not only in a navy but also in the need for its supporting elements. He wrote that ". . . to be secure on our Atlantic side, we must endeavor as soon as possible to have a navy. *To this purpose there must be dock-yards and arsenals . . . .*"[2] (Emphasis added by author.)

Others shared Hamilton's view. After the Revolution, American trading merchants had lost the protection that had been provided by the Royal Navy during the colonial era. Moreover, England actively sought to bar American trade with markets where they mutually traded. The loss of traditional markets sent American ships searching for new ones, and the loss of protection resulted in American merchant ships being easy prey for the Algerine corsairs. Thus, as early as 1790 and 1791, Secretary of War Henry Knox began seeking and collecting cost estimates for building and maintaining warships. His sources were John Foster Williams, a successful privateer from Boston, and probably John Wharton of Philadelphia. Included in his proposed ship sizes were frigates of 44 guns.[3]

Two factions then began what was to become a major Congressional debate which would continue for the balance of the Federalist period and well beyond. There were those who favored a Navy only for the protection of American coastal waters and harbors. They were defensive-minded and believed that a naval force would be too costly. On the other side were those who looked to Britain's Royal Navy as an example of the value of a strong navy, able to move at will against any enemy at any point in the world in both peace and war. It was within this framework that the Algerine corsairs were to provide the first test.[4]

*From *The Federalist*, No. 11, 24 November 1787.

The author wishes to express appreciation to Ann Bidlingmaier, William Crothers, W. M. P. Dunne, Tyrone G. Martin, Michael A. Palmer, and Portia Takakjian for reading and offering their editorial and technical assistance in the preparation of this article. This acknowledgement does not imply their support of the analyses or conclusions drawn. Their encouragement, however, cannot go without mention.

1. J. E. Cook, ed., *The Federalist* (Middletown, CT: Wesleyan University Press, 1961), No. 23, pp. 148-149.

2. Ibid., No. 24, p. 157.

3. C. O. Paullin, "Early Naval Administration Under the Constitution," U. S. Naval Institute *Proceedings* 32 (1906): 1002-1003. See also M. Smelser, *Congress Founds the Navy, 1787-1798* (University of Notre Dame Press, 1959), pp. 23, 58.

4. C. Symonds, *Navalists and Antinavalists: The Naval Policy Debate in the United States, 1785-1827* (Newark, DE: University of Delaware Press, 1980), pp. 12-13.

In October 1793, Portugal withdrew its blockade against Algerine ships sailing through the Straits of Gibraltar into the Atlantic. This action, arranged by England, accelerated hostilities between America and the Algerines. David Humphreys, American Consul at Lisbon, having been unsuccessful in negotiating with the Dey of Algiers, wrote President Washington in November of that year that "A naval force has now . . . become indispensible."[5] Washington's annual address to the Congress of the following month pursued this theme. Public opinion provided further momentum when the news of a truce reached Philadelphia in mid-December. Washington further increased his pressure when, on 16 December 1793, he charged Congress to develop means to confront the threat of the Algerines.

At this point Joshua Humphreys of Philadelphia, probably the leading ship designer and builder of the day, wrote a now famous letter to Senator Robert Morris. On 6 January 1794, noting that in ". . . the present appearance of affairs, I believe it is time this country was possessed of a navy. . . ," Humphreys ". . . ventured a few remarks on the subject." He agreed with Secretary Knox about the need for large frigates, and many historians have credited this letter with being the keystone in the process that led to their acceptance. Three major points stand out:

> Ships that compose the European navys [sic] are generally distinguished by their rates; but as the situation and depth of water on our coasts and harbors are different in some degree from those in Europe, and as our navy for a considerable time will be inferior in number, we are to consider what size ships will be most formidable, and be an over match for those of an enemy.
>
> Frigates, I suppose, will be the first object, and none ought to be built less than 150 feet keel; to carry twenty-eight 32-pounders or thirty 24-pounders on the main gun deck and 12-pounders on the quarterdeck. These ships should have scantlings equal to 74s, and I believe may be built of red cedar and live oak.
>
> Several questions will arise, whether one large or two small frigates contribute most to the protection of our trade, or which will cost the least sum of money, or whether two small ones are as able to engage a double-deck ship as a large one. For my part I am decidedly of the opinion that large ones will answer best.[6]

Many historians have agreed with Humphreys' emphasis on size. In the field of early American naval history, the marked lack of success of the Continental Navy is often attributed to the lack of substantial size and consequent light fire power of its ill-fated ships. In his popular *History of the American Sailing Navy*, Howard Chapelle points to three other ships as bearing heavy influence on the design of the warships during the Federalist period. These were the French designed and Dutch built *L'indien*, which became the frigate *South Carolina*, and the American designed and built frigates *Confederacy* and *Alliance*.[7] Between 1779 and 1787 all three ships were in Philadelphia. The frigate *Confederacy* was there during the fall of 1779, before sailing for France in late October of that year.[8] *South Carolina* was in Philadelphia during the latter half of 1782, after which she sailed and was captured by three Royal Navy ships off the Delaware Capes on 19 December. *Alliance* was "sold out of service" at Philadelphia in August 1785, and during May and June of 1787, the Wharton and Humphreys yard worked on the conversion of the frigate to a merchantman.[9] *Alliance*'s career ended shortly thereafter, when she foundered in the mud of the Delaware River.

Throughout his career, Joshua Humphreys must have gone aboard any significant ship that entered the harbor, taken down her measurements, and entered them into his various ledgers and primarily his *Notebook*. This Wharton and Humphreys *Notebook* carries the measurement tabulations of the Royal Navy's "Establishments," beginning with that of 1719 and carrying through those of 1737 and 1745.[10] Humphreys devoted seven pages of his *Notebook* to the large, heavily armed *South Carolina*. To state that the ship's size and unusually heavy armament made a positive impression on him is, at best, problematical. He made a terse comment, one of his rare assessments of a ship, about this one: "The *South Carolina* has three feet too much shear for a ship of warr [*sic*] & is too sharp at both ends & too full in the middle which makes her strain and hog amaizingly [*sic*]."[11]

5. Smelser, *Congress Founds the Navy*, pp. 51-52.

6. M. V. Brewington, [Humphreys] Files, Mystic Seaport Museum, G. W. Blunt-White Library (Mystic, CT). Humphrey's letter is actually dated "Jan y 6, 1793," but the evidence indicates that he wrote it in January of 1794.

7. H. I. Chapelle, *History of the American Sailing Navy*, (hereafter *HASN*) (New York: W. W. Norton and Co., Inc., 1949), pp. 84-85, 96, 98, 99, 118.

8. L. F. Middlebrook, *History of Maritime Connecticut During the American Revolution* 1 (Salem, 1925): 50-51. See also Wharton and J. Humphreys, *Dockyard Notebook* (hereafter Humphreys, *Notebook*), pp. 173-174 for hull, masts, and yard dimensions for this ship.

9. Humphreys, *Daybook, 1784-1813*, pp. 49, 51-53. The notations entered cover only wages for work and materials used during the conversion.

10. Humphreys, *Notebook*, pp. 1-16, 67-98, 155-161.

11. Ibid. pp. 215-222.

Thus, it is doubtful that his familiarity with these three vessels led Humphreys to support the building of large frigates. Nonetheless, his 1794 letter to Morris stated clearly his belief in large ships, and between January and March of that year, ". . . a naval force, adequate to the protection of the commerce of the United States against the Algerine corsairs . . ."[12] was authorized by Congress.

The House Committee communicated to the House of Representatives on January 20, 1794 that they were ". . . of the opinion that four ships carrying forty-four guns each, and two ships, carrying twenty-four guns each, will be sufficient . . . ." The Act to Provide a Naval Armament was passed by Congress on 19 March 1794. Two features of the act are noteworthy. The first was the increase of cannon number of the smaller vessels from twenty-four to thirty-six. The second was similar to one which accompanied the Quasi-War with France in 1798: ". . . that if a peace [is concluded] between the United States and the Regency of Algiers, that no further proceedings be had under this act."[13]

Many who delve into the early history of the U. S. Navy link the names of President Washington and Secretary of War Henry Knox to the completion of the first frigates of the new navy. What is often overlooked is the time frame during which the initial appropriation was made, construction started, stopped, and finally resumed. Three Secretaries of War served during that period, from early 1794 to mid-1798: Henry Knox, 27 March 1794 to 1 January 1975; Timothy Pickering, 2 January 1795 to January 1796; and James McHenry, 27 January 1796 to 18 June 1798, when Benjamin Stoddert became the first Secretary of the Navy under President John Adams.

In a second letter written five years later, Joshua Humphreys again detailed his thoughts supporting the design of the large frigates. Moreover, on 28 January 1798, he submitted a report entitled "Causes of Delays and Expenses in Building the Frigates" to Secretary of War James McHenry in which he stated that:

> . . . the construction and size of Frigates of the European nations were resorted to and their usefulness carefully considered. It was determined of importance to this country to take the lead in a class of ships not in use in Europe . . . it would oblige other powers to follow us instead of our following them . . . [our] ships of the present construction have everything in their favor, their great length gives them the advantage of sailing, which is an object of the first magnitude. They are superior to any European Frigates."[14]

Taken together, Humphrey's writings indicate that he contributed significantly to the acceptance of the concept of the large frigates as proposed by Knox in the early 1790s. But building such ships was not easy. One problem was the availability of live oak. During his term as Secretary of War, Timothy Pickering wrote: "Had the difficulties of getting the live oak been seen — had it been known that full and regular supplies for two only, could be kept up — certainly, the carrying forward of six frigates would not have been attempted."[15] The major effort of on-site cutting of live oak timbers to lofted moulds was done by skilled northern craftsmen working behind those who felled the trees. The purpose was to ease the overland hauling and reduce the shipping loads and related shipping costs.[16] Humphrey's 1798 report to Secretary McHenry described the difficulties involved in cutting and transporting the live oak timbers from Georgia as a major cause for the delays in completing construction of the early frigates.

By January 1796, Congressional appropriations for the March 1794 Naval Act had reached $688,888. Expenditures had come to $459,000, of which $113,000 had been spent primarily for imported copper. That same year saw the first ending of the conflict with the Barbary Powers and the successful efforts of President Washington to continue the ship construction program. The Naval Act of 20 April 1796 provided additional funds for completing the three frigates closest to final hull construction. The funds came from re-appropriating funds from both the unexpended portions of the previous appropriations and $80,000 from galleys previously approved.[17] During 1796 and into 1797, sufficient live oak had been received for completion of those three frigates. Thus, on 10 May 1797, *United States* (44) was launched at Philadelphia. On 7

12. Symonds, *Navalists and Antinavalists*, p. 29.

13. D. W. Knox, ed., *Naval Documents Related to the United States Wars with the Barbary Powers: Naval Operations, Including Diplomatic Background from 1785 through 1801*, 6 vols. (Washington, DC: United States Government Printing Office, 1939-1944 [hereafter *NDBP*]) 1: 69-70. See also Smelser, *Congress Founds the Navy*, p. 57; and Symonds, *Navalists and Antinavalists*, pp. 30-36.

14. Brewington Files, 20 January 1798 report. See also I. N. Hollis, *The Frigate* Constitution (Cambridge: The Riverside Press, 1900), pp. 35-36.

15. *NDBP* 1, p. 103.

16. Humphreys, *Letterbook, 1793-1797*, 30 August 1794, conditions; 21 October 1794, conditions; 20 December 1794, letter to John Morgan.

17. Smelser, *Congress Founds the Navy*, p. 79; Symonds, *Navalists and Antinavalists*, p. 40.

September *Constellation* (36) was launched at Baltimore (though rated as a 36, this vessel is identified by many as a 38), and on 21 October, *Constitution* (44) was launched at Boston.

The difficulties in completing the remaining ships authorized in 1794 were to continue, however. Ships chandlers' supplies, sailcloth, and many of the materials needed were dependent upon foreign sources. The major war raging in Europe hindered ready access to these sources. One major example was the difficulty in procuring cannon for the ships. John Barry, commanding the frigate *United States*, outfitting in Philadelphia, experienced frustrating delays while observing cannon test firings. At Cecil Furnace, Maryland, six out of eight guns tested burst on the first day. The following day he watched five out of six fail. Of forty-four barrels tested, only twelve passed.[18] Such problems meant that the remaining three ships of the 1794 appropriation were delayed a year. But the deteriorating relations with France provided the impetus for completion, and work did resume in 1798 with the following completion and launch dates: *Congress* (36) at Portsmouth, New Hampshire, 15 August 1799; *Chesapeake* (36) at Norfolk, Virginia, 2 December 1799; and *President* (44) at New York, 10 April 1800.

The year 1798 inaugurated the brief ascendency of the Navy to a level not envisioned just four years earlier. This brief period was to last only until 1801, during which time Benjamin Stoddert served as the first Secretary of the Navy. It was during his term in this office that the original four 1794 frigates were completed, the Quasi-War with France was fought, the 74-gun ships began their short life span, and the first Navy yards were established.

Benjamin Stoddert was a veteran of the Revolutionary War who became a successful merchant in the Washington D. C. area now known as Georgetown. Stoddert was instrumental in acquiring the land for the government which was to become the site of the nation's capitol. He was Adams' second choice for the new post of Secretary of the Navy, after New Englander George Cabot. Adams appointed Stoddert on 18 May 1798, and confirmation came three days later.[19]

Hostilities between the United States and France ignited one month later. Serving in effect as his own Chief of Naval Operations, the new secretary initially deployed the ships available to him. On 12 December 1798, Stoddert wrote to Captain John Barry ". . . setting forth the disposition of Naval Forces of the United States in the West Indies and vicinity for protection against the depredations of French armed vessels."[20] But by year's end Stoddert had apparently begun to feel that the 44-gun frigates available to him were insufficient. In a lengthy letter dated 29 December 1798 to Josiah Parker, Chairman of the House Committee on the Naval Establishment, Stoddert presented his recommendations for twelve ships of 74-guns. The protection of the American coastal waterways was the main justification for defense against any French invasion attempts. If the U. S. had the 74s, "[France] would be obliged to employ more than double the number of ships of equal force, to convoy her armies, provisions and stores, and to keep the communications open between her armies and her own country," he wrote. Stoddert also stressed the ability of the 74s ". . . to afford security to every part of our country."[21]

Stoddert's letter also outlined the arguments for and against buying such ships from a foreign source vs. building them. He pointed out the availability of materials, except for copper, and argued that the use of live oak was indispensible. To solve the latter problem, Stoddert recommended the purchase of one or two small islands off the coast of Georgia that would guarantee a source of these trees. The letter also contained his recommendations for large docks and yards for building the ships, and five pages of cost estimates for the ships being requested. The letter was presented to the House on 2 January 1799, with all of Stoddert's recommendations. The House approved six of the 74s and six sloops, along with the $1 million of construction costs.

Albert Gallatin, a long time opponent of establishing a navy, moved to delete the 74s from the measure. Not only did he refute the defensive role of the ships, but he challenged the wisdom of appropriating only part of the $2.4 million total estimated by Stoddert. Gallatin's reluctance was based on his belief that the construction, operation, and maintenance of such vessels was beyond the reach of the country's limited revenue sources. He also expressed the fear that the remaining six 74s would be

18. W. B. Clark, *Gallant John Barry, 1745-1803: The Story of a Naval Hero* (New York: Macmillan Company, 1938), pp. 395-397.

19. *Dictionary of American Biography*, 20 vols. (New York, 1928-1936) 9: 62-64. See also Harriott Stoddert Turner, "Memoirs of Benjamin Stoddert, First Secretary of the Navy," *The Records of the Columbia Historical Society* 20 (1917) [read before the Society on 16 May 1916]. Ms. Turner was Stoddert's great-granddaughter.

20. Dudley W. Knox, ed., *Naval Documents Related to the Quasi-War with France, Naval Operations, February 1797-December 1801* [hereafter *NDQW*] 2, pp. 70-72.

21. M. P. Clauson, ed., *National State Papers of the United States*, Part 2, (Wilmington, DE: 1980) 10, Texts of Documents 8 December 1798-7 January 1799, Document No. 25, pp. 305-319.

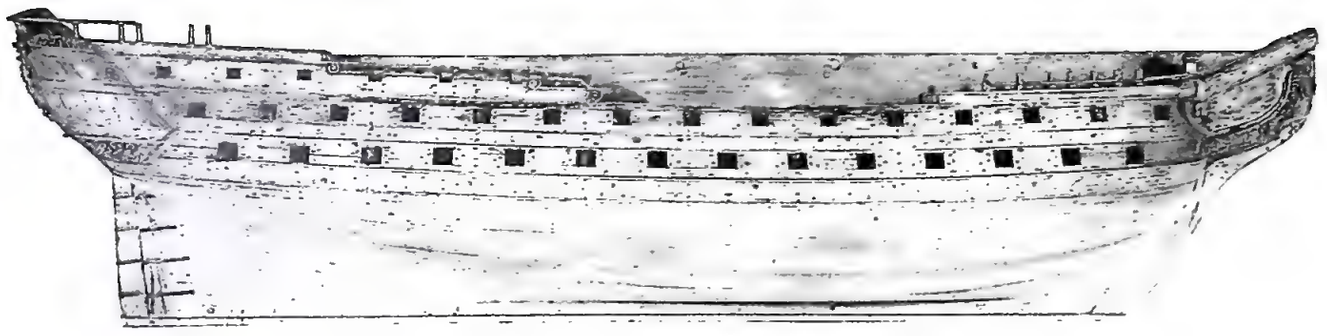


Plate 1: Joshua Humphreys built this half model of a 74-gun ship in 1778. Model on loan from the Independence National Historical Park, courtesy of the Philadelphia Maritime Museum.

requested in future years.[22] But Gallatin was unsuccessful. The act passed by Congress on 25 February 1799 appropriated the $1 million for the six 74s and the sloops. An additional $35,000 was provided to change the 24-gun frigates to 32 guns. On that same date, Congress appropriated $50,000 for dockyards and $200,000 for the purchase of live oak bearing islands.[23]

Stoddert's record during the first two years of his term is quite remarkable. At the end of 1797 the U. S. Navy had only three active ships. By the end of 1799, thirty-three ships were in commission, including five 44s, four 36s, seven 32s, three 24s, seven 20s, four 18s, and three 14s. In addition, nine galleys had been constructed for shore defenses and eight revenue cutters were transferred from the Treasury Department.[24]

During the course of the Quasi-War, improved relations with England helped solve the problems of the lack of an American source for coppering ships' bottoms. Though tenuous, the support provided by Britain was instrumental in the actual development of the first ships. In addition to making ships' chandler supplies and materials available, the British provided the ingredients for making gunpowder, as well as a surprisingly large number of the cannon mounted on the American ships. Their provision of copper sheathing, however, was of utmost importance, because to venture into Caribbean waters without such protection would have decimated the ships. Between 1795 and 1799, the British supplied som twenty-five tons of this vital material, but they cut off th supply when the Royal Navy insisted that its ow priorities were greater than those of American ships.[25]

Drawings
The 74-gun Ships of 1799

By the time Congress authorized the 74-gun ship: Joshua Humphreys had already achieved a position c prominence in the young U. S. Navy. During th Revolutionary War, he worked at the Penrose yar converting five merchantmen into the first warships of th Continental Navy. One source overstates the case fc Humphreys' having designed the ships commanded b Ezek Hopkins in the first foray of that navy,[26] but he wa involved in the conversion of merchantmen to th warships *Alfred*, *Columbus*, *Cabot*, *Andrew Doria*, an *Providence*. His involvement compelled the Friend Society to bar Humphreys from the Society.[27]

22. Symonds, *Navalists and Antinavalists*, pp. 74-76.

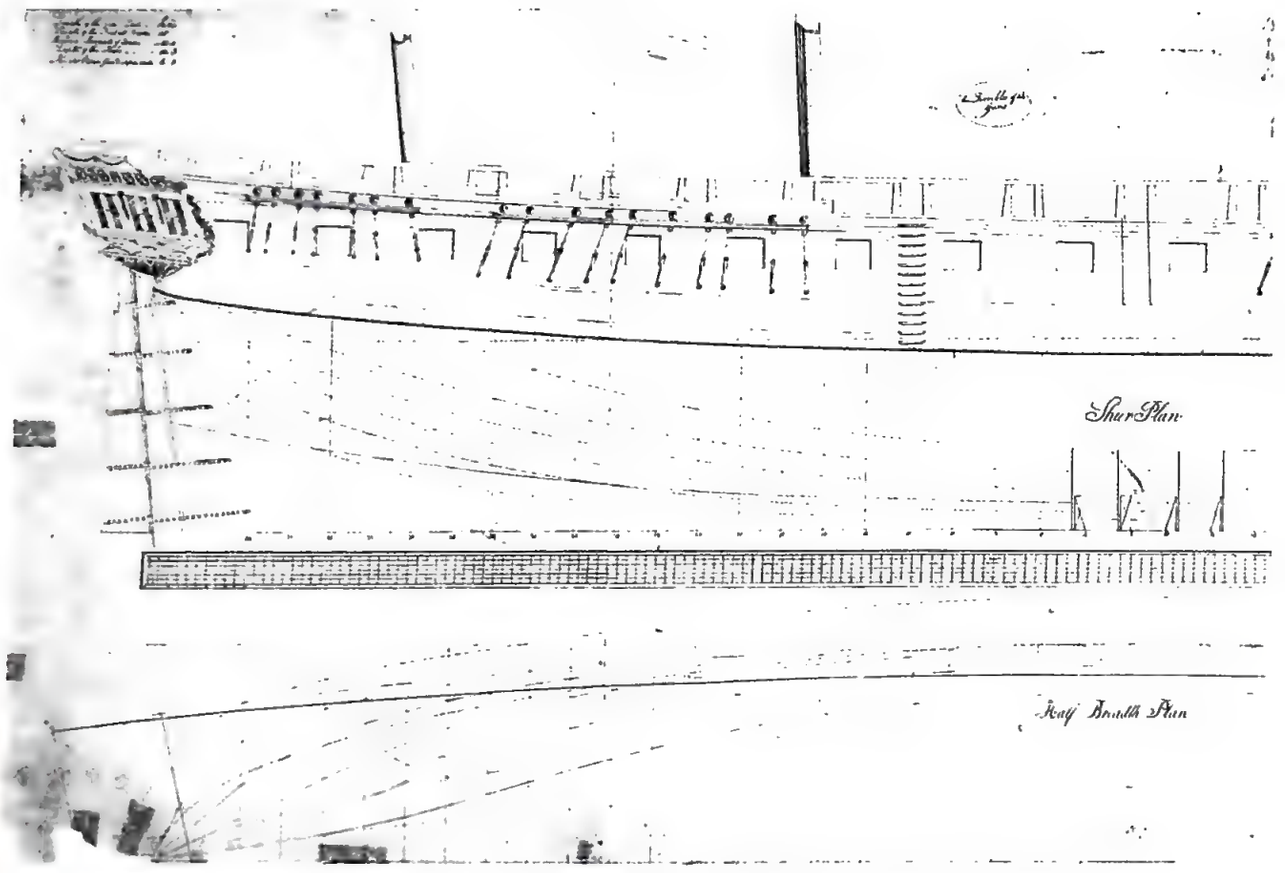
23. Ibid., p. 79. See also *NDQW* 2, pp. 399-400.

24. C. O. Paullin, "Early Naval Administration Under the Constitution," USNI *Proceedings* 32, no. 3 (1906): 1021.

25. M. A. Palmer, "Anglo-American Cooperation, 1798-1801," *Naval History* 4, no. 3 (Summer, 1990): 14-20. Palmer has identified the twenty-five ton amount of copper sheathing imported from Britain. See also B. Perkins, *The First Rapprochement: England and the United States 1795-1805* (Berkeley, CA: University of California Press, 1967), pp. 97 passim; and M. A. Palmer, *Stoddert's War: American Naval Operations During the Quasi-War with France, 1798-1801* (Columbia University of South Carolina Press, 1987), p. 121.

26. H. L. Carson, *The Humphrey Family of Havorford an Philadelphia* (Lancaster: Wickersham Press, 1922), p. 7.

27. Ibid. See also Brewington Files, letter from W. B. Yarnell t Brewington 24 October 1948 and enclosed copy of statement dated April 1776 pertaining to Joshua Humphreys being disunited ". . . fro religious fellowship with us."



'late 2: Humphreys' draught of the frigate *Terrible*. The text within the oval reads "The Terrible of 44-guns," and the dimensions ·f Beam, 43 ft. 6 in.; Depth of Hold, 14 ft. 3 in.; Height between Gun & Upper Deck, 6 ft. 6 in." Courtesy of the National

Then, on 13 December 1775, the Continental ongress resolved to build a fleet of thirteen frigates for Continental Navy.[28] Humphreys prepared the design of three classes of frigates (five of 32 guns, five of 28 s, and three of 24 guns) between mid-December 1775 mid-January 1776.[29] *Randolph*, a 32-gun frigate, was t at the Wharton and Humphreys shipyard in 1776.[30] Two years later Humphreys built a half-hull model of -gun ship "for the Honorable Navy Board."[31] The Continental Congress had approved two 74-gun ships in 1778, but Humphreys' dimensions and half model (see Plate 1, page 177) were not incorporated into *America*, built at Portsmouth, New Hampshire, between 1778 and 1782.

During the Federalist period, Humphreys was responsible for the draught of a 44-gun frigate named *Terrible*. This odd, British sounding ship's name was entered on the draught within an oval directly over the Sheer Plan. Two independent reviews of this draught confirm Humphreys as its originator.[32] The draught was used as the basis for the Josiah Fox and William Doughty copies sent to the shipyards building the 44-gun frigates of

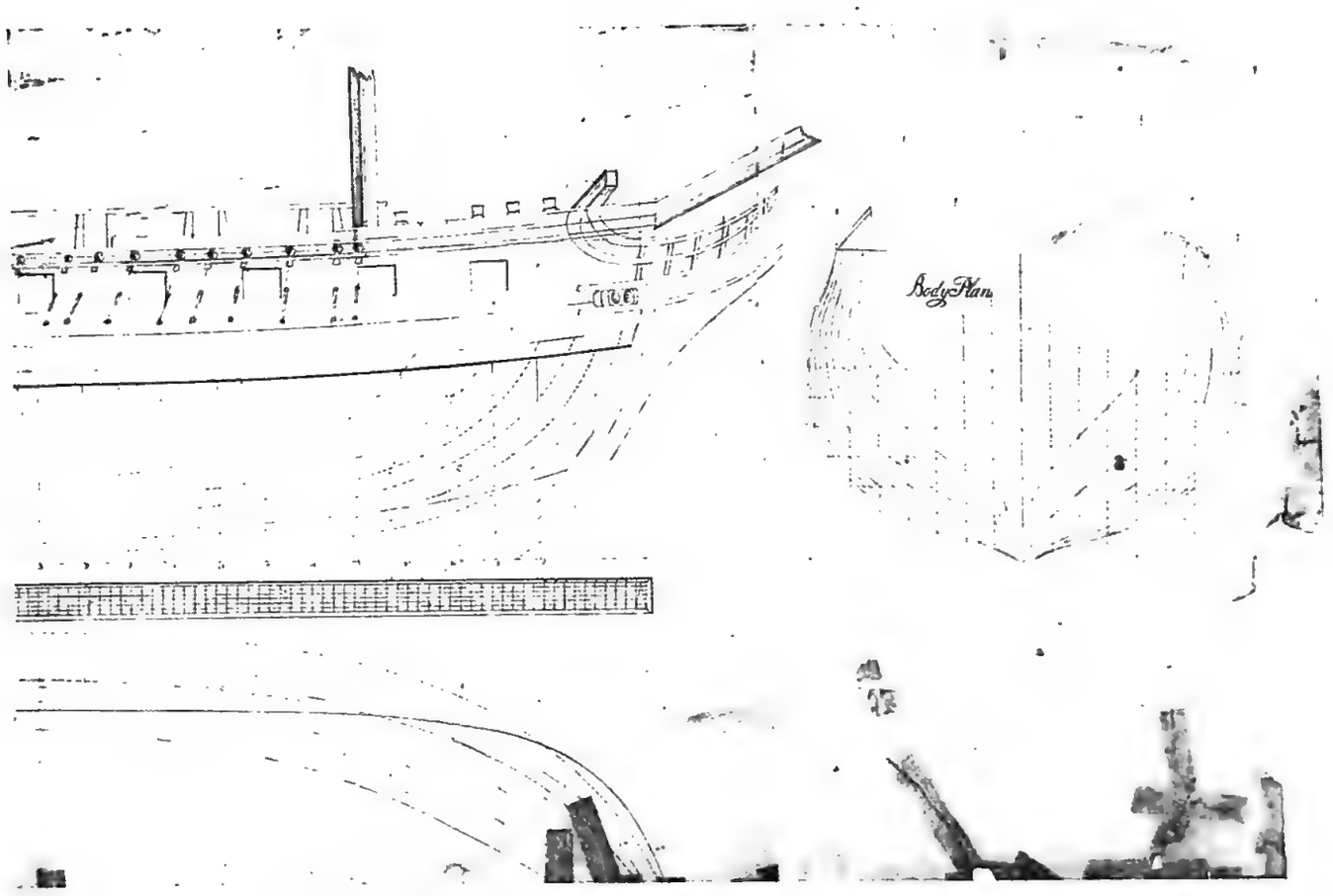
28. M. V. Brewington, "The Designs of Our First Frigates," *The 'can Neptune* 8, no. 1 (January, 1948): 11.

29. Ibid., pp. 11-33.

30. Humphreys, *Notebook*, pp. 162-164. This ship measured: length deck 137 feet 3 inches, keel for tonnage 112 feet, extreme breadth m 34 feet 6 inches, and depth of hold 11 feet. Pages 165-166 carry nensions of *Delaware*, a frigate of 28 guns.

1. Ibid., pp. 171-172. The model is based on the following ·ements: 147 foot keel, 49 foot beam, and 19 foot depth of hold. currently on display at the Philadelphia Maritime Museum.

32. Chapelle, *HASN*, pp. 57-58; T. G. Martin, letter to author, 25 October 1990. Both reviews of the original draught of *Terrible* concur that the drafting techniques and the handwriting are those of Joshua Humphreys.



in the upper left corner are "Length of the Gun Deck, 174 ft. 10½ in.; Length of the Keel at Rabbit, 145 ft.; Moulded Bread
Archives, Record Group No. 19, No. 40-15-6A.

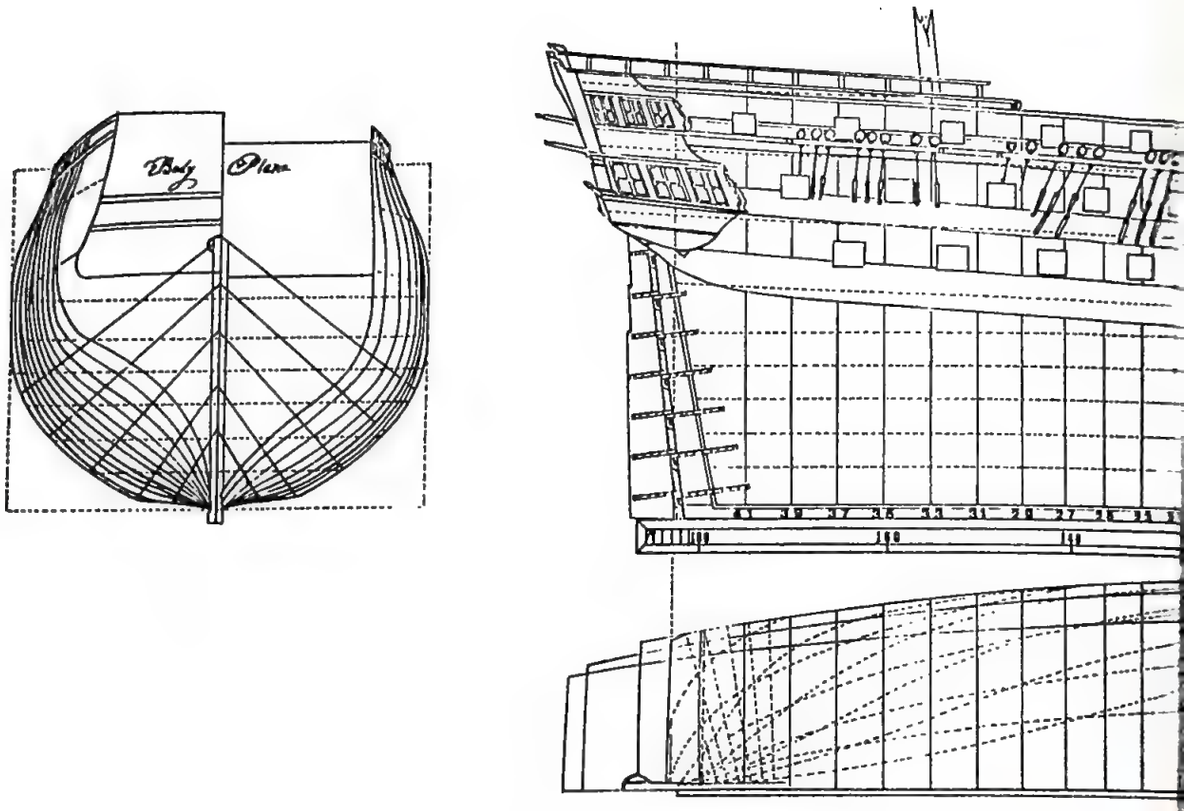
1794. See Plate 2 above.

It was logical, then, that Humphreys should be involved in the planning of the 74-gun ships of 1799. There are three drawings of the ships available from the National Archives. The first drawing is dated 20 March 1799, with Joshua Humphreys' name as part of the handwritten drawing title. It is interesting to note the short time span between the 25 February 1799[33] Congressional authorization and the date of Humphreys' first drawing. This original draught for the 74-gun ships reflects his original design concept of a double gun-decked ship of 178 feet between perpendiculars, carrying tiered gun battery weights. Twenty-eight 32-pounders were to be on the lower gun deck, thirty 24-pounders on the upper deck, and sixteen 9-pounders were to be placed on exposed decks, twelve on the quarter deck and four on forecastle. The "Burthen in Tons" was calculated at 1,' 21/95ths tons.[34]

The second drawing of the ships carries the nota "copied from the original by Samuel Humphreys." drawing, by Joshua's son, reflects the changes requested by the Navy and as authorized by appropriation measure. The ship was lengthened 5 fe 183 feet between perpendiculars, and the keel for tonr was extended from 145 feet 2 inches to 150 feet 1 inches. The burthen tonnage was increased by ne

33. H. and M. Sprout, *The Rise of American Naval Power*, 1776-1918 (Princeton: Princeton University Press, 1944), pp. 43-48. See also Paullin "Early Naval Administration Under the Constitution," pp. 1028-1029.

34. National Archives and Records Service, Cartographic Architectural Branch, Washington, D. C., Record Group No. 19 [here NARG 19], Drawing No. 40-15-6I, Joshua Humphreys, dated 20 M 1799.



igure 1: Samuel Humphreys' copy of Joshua Humphreys' original draught of a 74-gun ship incorporated changes requested by

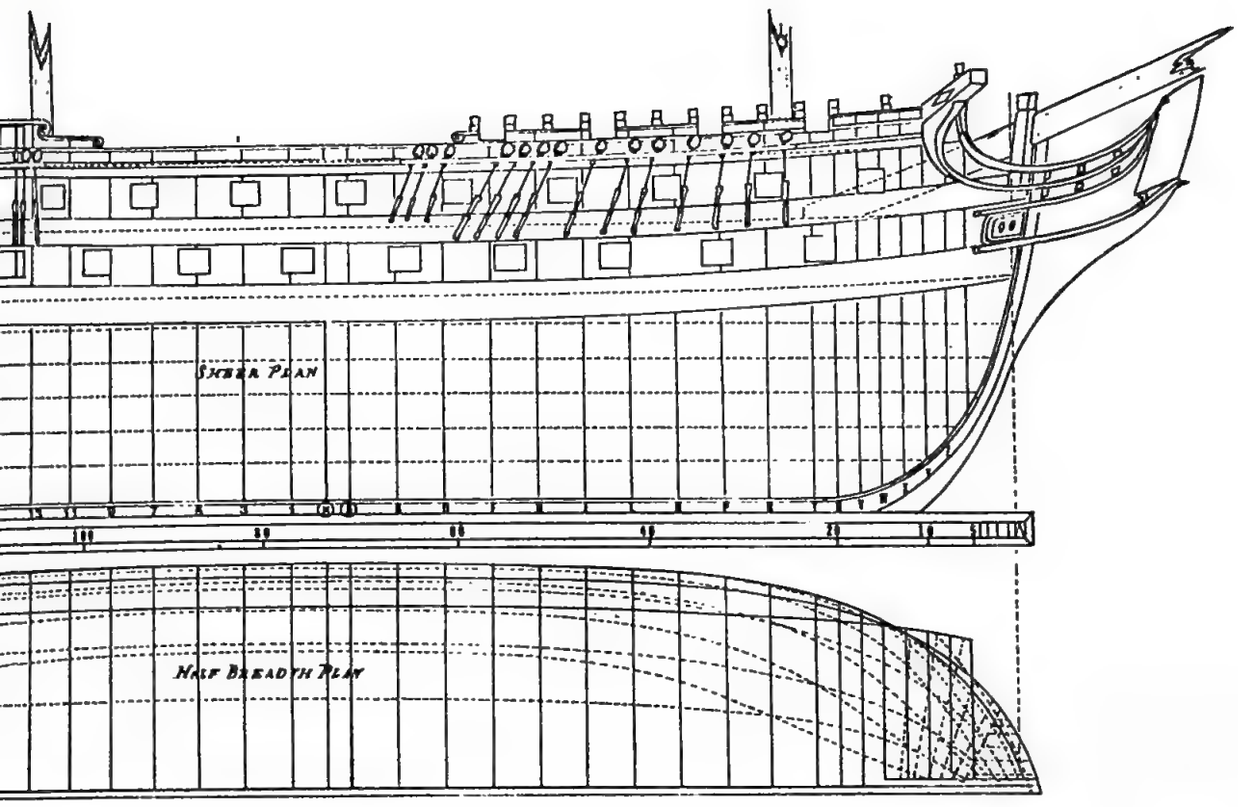
tons to 1,858 91/95ths."[35] Thirty-two-pounder cannon e to be carried on all decks. Figure 1 above is a copy his drawing. Samuel Humphreys was to attain success ı ship designer and builder and was appointed Naval ıstructor at the Washington Yard on 13 April 1813. ıua Humphreys' original drawing carries a set of ıtions above the lower gun deck line of the Sheer Plan. se notations indicate the frame locations for the larger) drawn by Samuel Humphreys, and they show the lship filling frame in the same relative position (see re 2A on page 182). The carryover from the original ign can be seen with the insertion of two additional ne bends to lengthen the ship. A circle A forward and rcle 1 aft of the midship frame provide the extension. se frame insertions are shown in Figure 2B on page . Note that circle 1 and the midship filling frame are and the same. The lengthening appeared in the after ion due to the increased space from the after-most gun deck ports to the quarter galleries (see Figure 3 on page 183). This appearance is due to the extension of scale measurements on the two drawings: 178 feet on Joshua Humphreys' drawing and 183 feet on Samuel's.

The third drawing is also labelled "Copied from the original" but is signed by William Doughty, who was long associated with Humphreys, and dated 18 July 1799. This drawing also carries the handwritten note "Compared with the Original" and is signed by Joshua Humphreys, which indicates that Humphreys checked both the lines and measurements of this copy against his original. An additional handwritten note reads:

> Original draught by Humphreys
> of Independence, etc.
> note: Above copied from legend on back of plan.
> E. P. Wheaton
> 7/19/1935[36]

35. NARG 19, 40-15-6J, Samuel Humphreys.

36. NARG 19, 41-1-5A, William Doughty, dated 18 July 1799.



the Navy and Congress. Traced by the author from Samuel Humphreys' draught, NARG 19, 40-15-6J.

Considerable original data pertaining to the 74-gun ships of 1799 are available in the various papers, letters, and shipyard records of Joshua Humphreys. Several items stand out. For example, the term "ships-of-the-line" is not used; all notations and writings refer only to the "74-gun ships." Many proponents of a large navy repeatedly used the term "ships-of-the-line," dating back to *The Federalist* and continuing into the Washington and Adams administrations. But as Humphreys designed them, the 74-gun ships were insufficient in broadside weight to be part of a naval arms race. Humphreys was promoting his concept of speed, maneuverability, and heavy armament for ships capable of operating singly or in small units. While his initial design did carry 32-pounder long guns on the lower gun deck, the lighter cannons on the upper deck, and particularly the weather decks, were replaced by the heavier 32-pound cannons in the final drawing.

What is perplexing is that the only hull dimension changes were in the length of the hull; no changes were made in width or depth. But the need for additional spacing between the substituted 32-pounders on the upper gun deck would have required more than such a minor change. The additional weight to be carried would warrant considerably more width and depth of the hull.

Nonetheless, the existence of all the original data used by Humphreys led this author to attempt to develop a set of construction drawings for the 74-gun ships. The first step was to create a framing diagram which would accommodate two frame bends between each of the vertical station lines as called for in the Samuel Humphreys draught and the measurements called for in his father's *Letterbook*.[37] The area occupied by the frame bend is called the room; the space between it and the next bend is called the space. Each frame bend consists of two individually built up sections called futtucks. At the base of the bend are the floor and first, or lower, futtucks, followed upward by alternating second, third, and fourth futtucks, and top timbers. The two individual sections are bolted together to create the full frame. This structure is illustrated in Figure 2B on page 182.

37. Humphreys, *Letterbook, 1797-1800*, pp. 265-277.

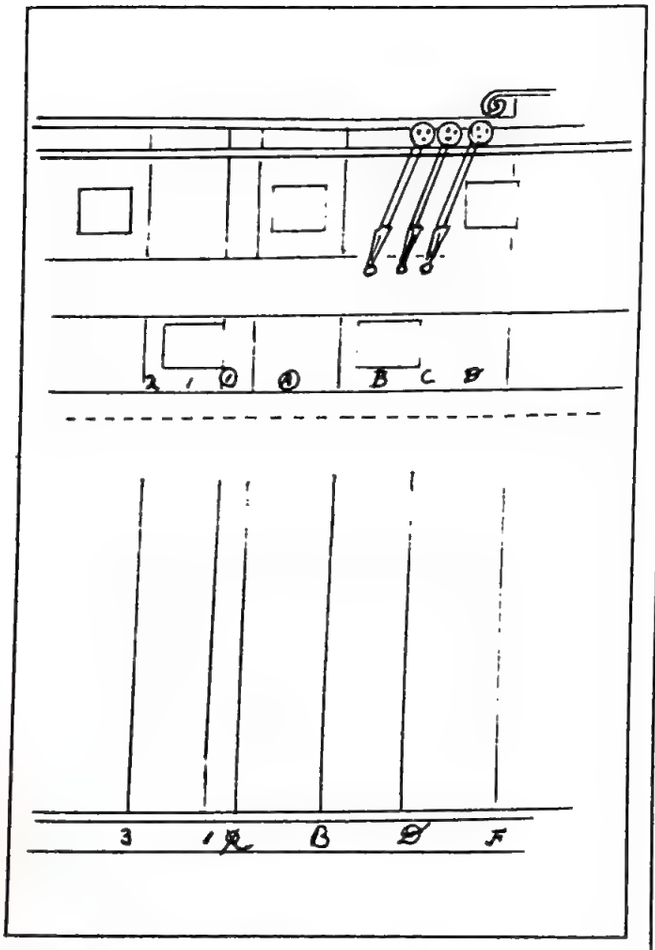


Figure 2A: The station designators along the keel are those on the original 74-gun ship draught by Joshua Humphreys of 20 March 1799. The designators below the gun deck ports are those pencilled in on this original and show the alignment for the lengthened second drawing. Traced by the author from the original draught, NARG 19, 40-15-6I.

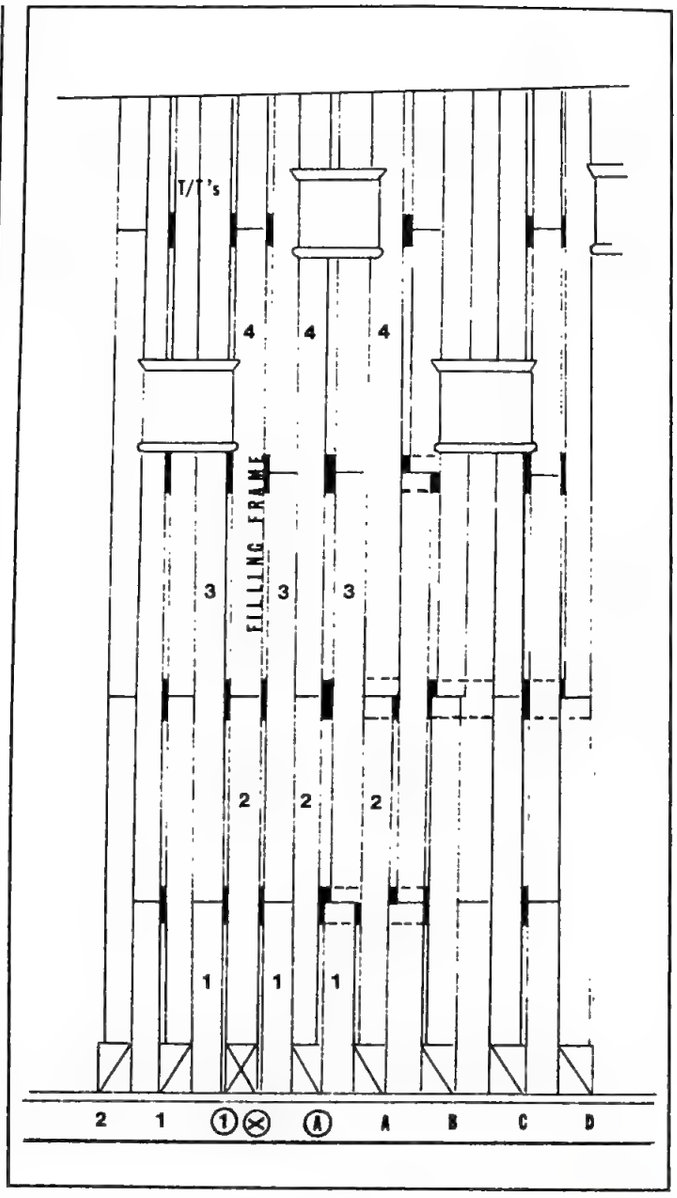


Figure 2B: Note shift of futtucks, bends A and B, and the use of bend separating chocks.

The framing stations illustrated in the drawings and the dimensions of the floors and first futtucks carried in the Humphreys text provide for two frames to fit between each pair of vertical station lines. The two frame members, providing the base of a frame, allow for frames being placed virtually alongside each other. But placing the frames as designated leads to the problem of futtuck shifting. This practice was not unusual. Futtuck shifting results in inserting chocks at the futtuck joints rather than the insertion of treenails through the overlapping frame sections. One of the main reasons for shifting the futtucks is to avoid cutting into the side of a frame member in order to accommodate gun port openings. The 1798 *Shipbuilders Repository* issued a strong reminder against this weakening:

> . . . it being of the utmost consequence to the strength of a ship that timbers should as much as possible be prevented from being cut by the ports on each deck.[38]

38. *Shipbuilders Repository*, Appendix 4, "The Principal Dimensions and Scantlings" (1789 Edition), p. 137.

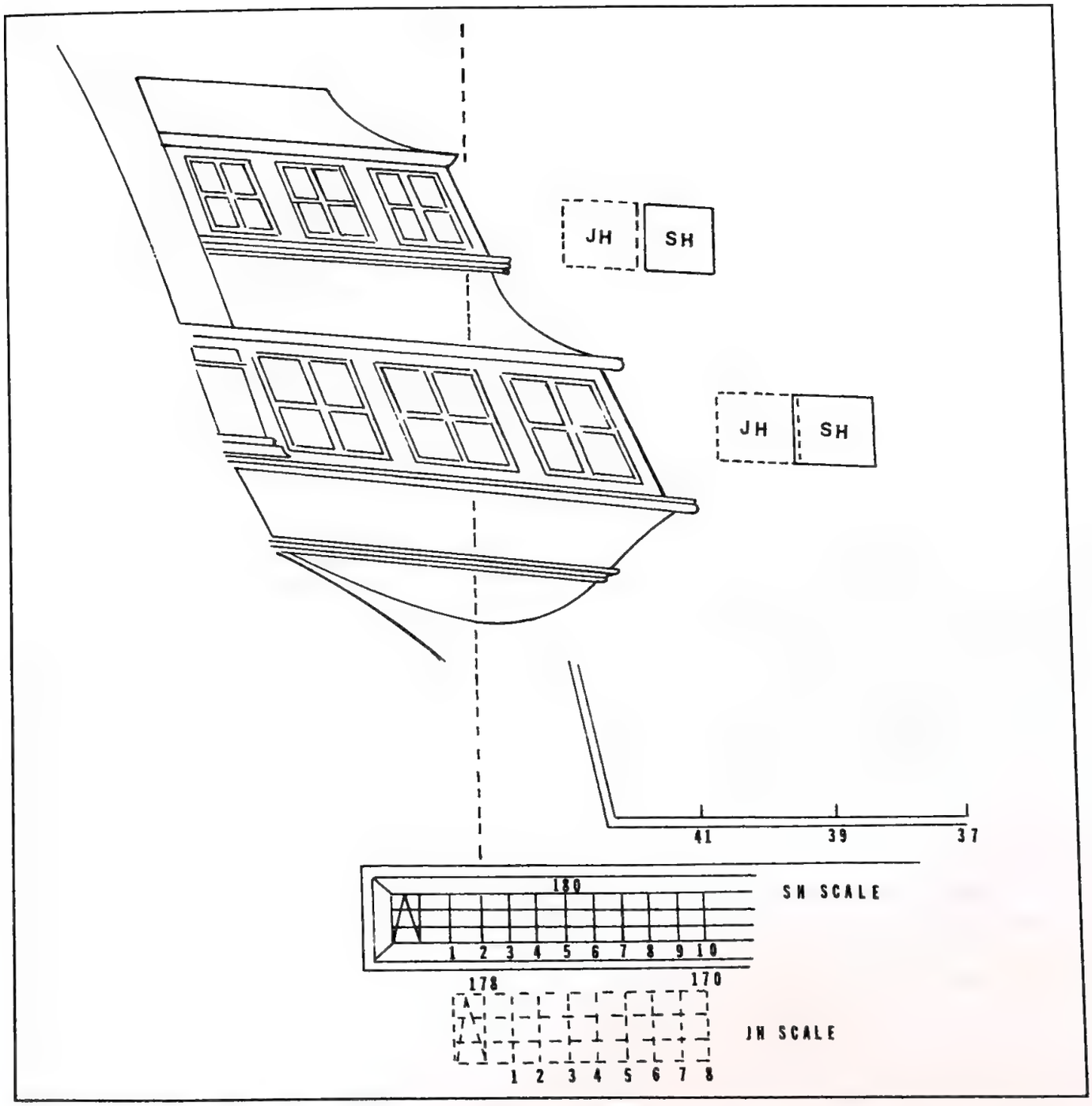


Figure 3: The quarter gallery, with measurements at stern- and aft-most gun port location comparisons. Traced by the author from NARG 19, 40-15-6I and J.

Humphreys also used chocks as spacers between the rising and narrowing sections between frame bends. Adjusting the space between frame bends allows the frame sides to fit against gun ports. This approach is also illustrated in Figure 2B.

Another difficult task was placing the Load Water Line (LWL) on the Sheer Plan. This line shows the planned height of the lower gun deck ports above the water line. The additional gunweights called for by the Navy and approved by Congress would have forced the lower gun deck ports closer to the water than on the original draught. Maintaining the same breadth and depth

of hull would have adverse results some years later.

The incorporation of the traditional beakhead/bulkhead in these ships' drawings points out additional features. All three drawings cited above run the bowsprit over the stem and on to the upper gun deck. The hawse holes were located two feet below the upper gun deck, thus forcing the handling of the anchor cables to the lower gun deck. This combination did not become an issue during the short life span of these ships. The issue arose, however, during the actual construction of the 74-gun ship *Independence* during the War of 1812. William Bainbridge, in a letter to the Secretary of the Navy, made it quite clear that such features were impractical for the ships. The contents of the letter suggest that Commodore Bainbridge had previously sent the Secretary a draught for the ships which ". . . did not lay down the beakhead/bulkhead timber, but showed a frigate's bows." Bainbridge drew from a 1796 report by Gabriel Snodgrass in which the noted British shipbuilder stated that "no line-of-battle ship should work their cables on the lower deck." Further comments by Bainbridge pertaining to the bowsprit pointed out that the original Humphreys design which stepped the bowsprit ". . . on the upper deck and giving a beakhead-bulkhead would leave the bowsprit very insecure, and I presume that no ship was ever so built."[39] Had the six original 74-gun ships reached the construction stage, this issue would no doubt have been raised at one or more of the building sites.

There is a relationship between the several construction features: the beakhead/bulkhead forcing the bowsprit onto the lower gun deck, and the hawse holes being low on the upper gun deck rather than high on the lower gun deck, thereby reducing the problem of taking on water in heavy seas and easing cable handling. With the beakhead/bulkhead, however, the head rails are lower and more acute in their upward sweep, thus making them less safe. The drawings made by the author reflect maintaining the beakhead/bulkhead feature, raising the hawse holes, and showing the bowsprit steeved to the lower gun deck. See Figure 4 below.

39. H. Dearborn, *The Life of William Bainbridge, Esq.* (Reprinted Princeton, NJ: Princeton University Press, 1931 [originally published in 1816]), pp. 182-185.

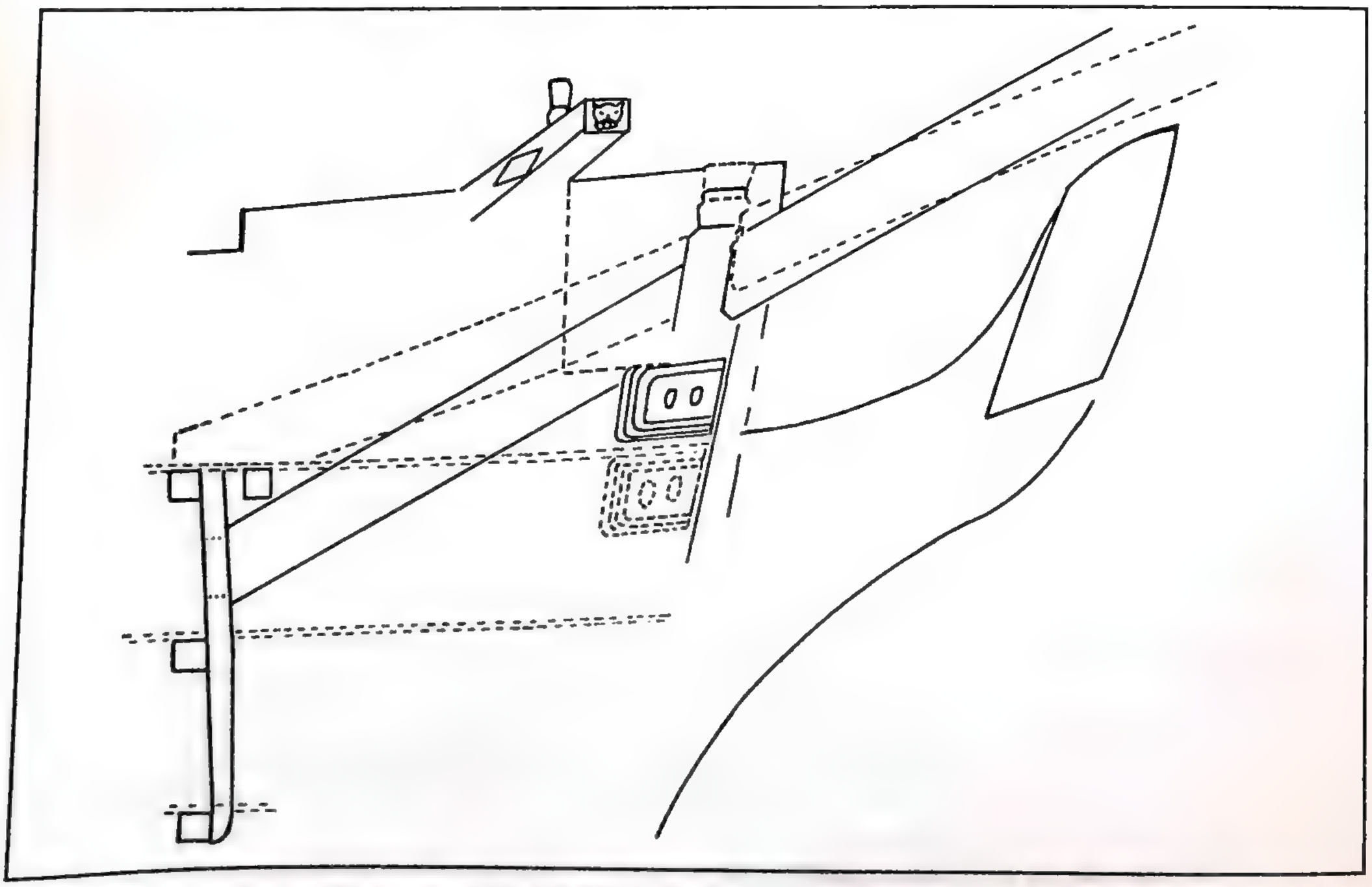


Figure 4: The beakhead/bulkhead issue. This original drawing by the author shows the alterations to Humphreys' designs that were recommended by Captain William Bainbridge in 1812.

MEASUREMENTS
THE 74-GUN SHIPS OF 1799

Joshua Humphreys' ledger books, in which he wrote many of his letters and ships' measurements, are among the many original source documents available at the Historical Society of Pennsylvania. Included in the *Letterbook, 1797-1800* are the detailed "Measurements" (specifications) for the 74-gun ships of 1799. These measurements were prepared in two separate segments. The first, beginning on 21 March 1799 and continuing until September 11 of that year, were for the on-site timber cutting measurements, written for the live oak timber gathering activities taking place in the South.[40] Further measurements addressed timber procurements from sources other than the South. Strakes, deck clamps, wales, knees, etc., were priced as coming from the Delaware River Basin.[41] Humphreys also listed "probable quantities"[42] of copper needed.

The second segment, "Particular Dimentions [*sic*] of the 74-gun Ship as taken from the Mould Loft floor," applied to the making of moulds (patterns) for the final shaping of the timbers for actual construction.[43] Two, two-page spreads cover the heights and half breadths in the fore and aft bodies.[44] The length, breadth, and thickness of each section of frame are tabulated, starting aft from Frame Number 39 and continuing through the midship frame forward through Frame W. The cant frames are included in these tables: they are numbered 40 through 43 aft and, oddly, 1 through 5 forward. Throughout these tables the floor timber of each frame measures 1 foot 3 inches in its fore and aft siding (width). The first futtucks are sided 1 foot 2 inches and the upper futtucks are 1 foot 1 inch.[45]

In making the transition from the 44-gun frigates to the 74-gun ships, Joshua Humphreys drew heavily from the materials developed for the frigates. It is very easy to compare the specifications for the two classes of ships. The wording is virtually the same and in the same topical sequence. Table 1 shows the comparative sizes of the ships, and the contrast between the work of Humphreys and the *Shipbuilders Repository* regarding the number of deck beams for the 74-gun class of ships:

Table 1
COMPARATIVE MEASUREMENTS[46]

	44-gun Ships	74-gun Ships
Length Between Perpendiculars	174 ft., 10 1/2 in.	183 ft., 0 in.
Length of Keel	145 ft.	150 ft., 1 7/8 in.
Beam (Moulded)	43 ft., 6 in.	48 ft., 6 in.
Depth of Hold	14 ft., 3 in.	19 ft., 3 in.

NUMBER OF DECK BEAMS FOR A 74-GUN SHIP[47]

	Joshua Humphreys	*Shipbuilders Repository*
Upper Gun Deck	34	28
Lower Gun Deck	33	27
Quarter Deck	35	25
Orlop Deck	30	22
Round House	18	22

One item of particular interest was Humphrey's specifications for diagonal riders. British ships of the time were constructed with 17-inch thick floor, 16-inch thick lower, and 14-inch thick upper futtuck riders. These riders were the heavy inboard timbers which crossed the keelson parallel with the midship frames and rose vertically up the inside of the ship's hull, through the orlop deck to the lower gun deck. Their purpose was to support the weight of the upper decks by the transfer of weight downward to the ship's keel structure through these support timbers. Humphreys called for diagonal riders for both the 44s and the 74s. His text describes the six pairs of riders on each side which start at midships and extend upward from their tenoned and bolted position on the keelson, two deck beams apart forward (and aft for those aft of midships). He maintained the two deck beam apart parallel spacing

40. Humphreys, *Letterbook, 1797-1800*, pp. 209 ff.
41. Ibid., pp. 211-212.
42. Ibid., p. 218.
43. Ibid, pp. 258-291. At the bottom of page 258 is the notation, "Timber and Room, or room and space — 2 feet 5 inch & 1/5 of an eight or thereabouts."
44. Ibid., pp. 261-264.
45. Ibid., pp. 264-267.
46. *American State Papers, Naval Affairs* 1 (Washington, DC: Gales and Seaton, 1834), pp. 10-13 [for the 44-gun frigates]; Humphreys, *Letterbook, 1797-1800* [for the 74-gun ships].
47. Humphreys, *Letterbook, 1797-1800*, p. 297; *Shipbuilders Repository*, pp. 149, 157, 168, 171, 173.

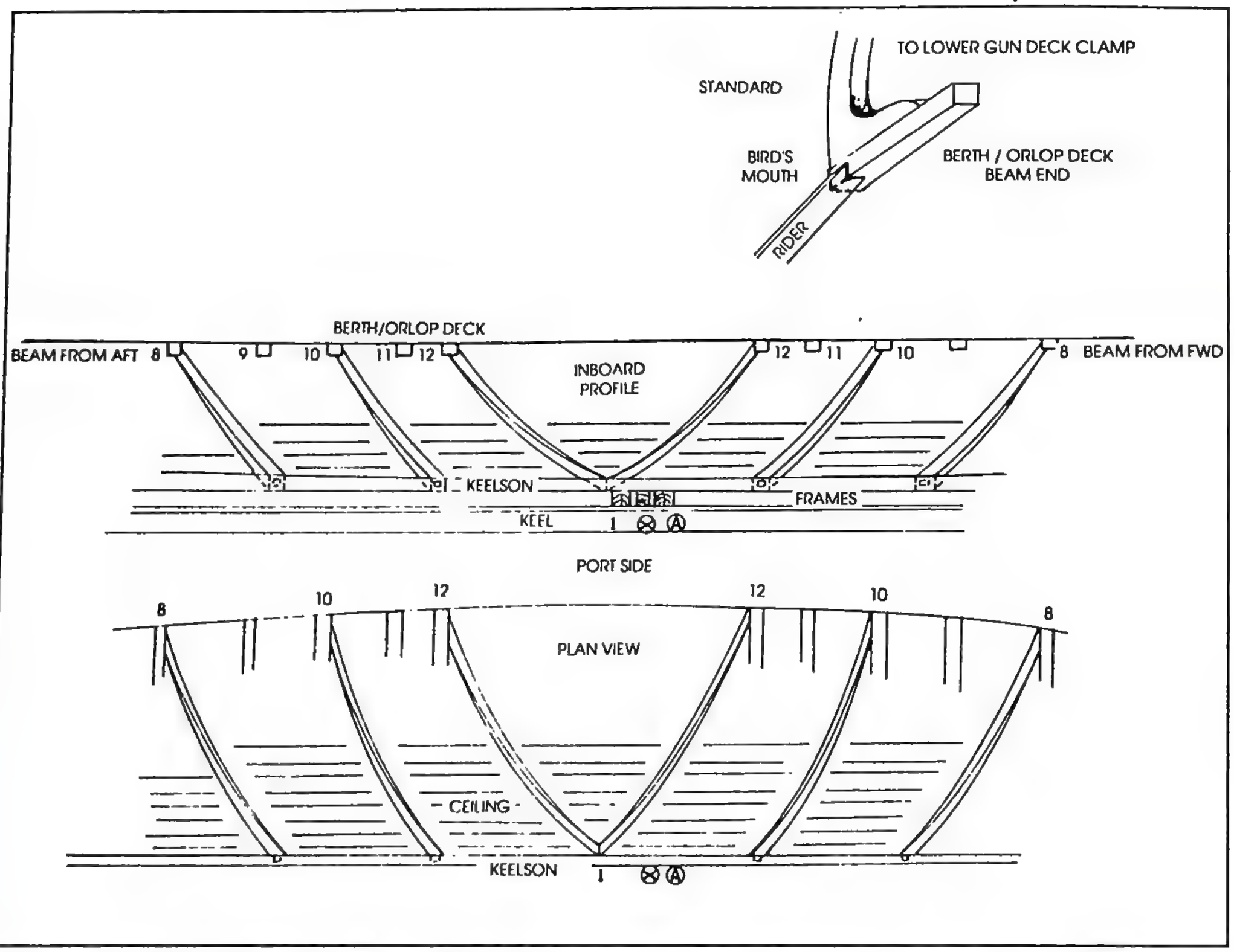


Figure 5: Humphreys' specifications for the 74-gun ships called for diagonal riders as shown here. Drawing courtesy of William L. Crothers, adapted by author.

to the fitting of the upper ends to their respective orlop deck beams fore and aft, beginning with the eighth beam from forward and from aft; then to the tenth and to the twelfth. Humphreys indicated that the joining at each orlop deck beam was ". . . to be cut with a bird's mouth."[48]

The six-per-side orlop deck beam ends fitted with the riders were to have standards fayed on top of the beam ends. These standards, sided 13 inches, were inverted hanging knees. They were to extend vertically upward to the top of the lower gun deck clamps. The remaining six standards were to be placed amidships.[49] The orlop deck beam ends not fitted with diagonal riders and/or standards were to be supported by conventional hanging knees.

The diagonal riders were to serve the same purpose as the floor and futtuck riders of the English design; that of transferring the weight of the upper decks downward to the rigidity of the keel assembly. Such internal bracing was to prevent "hogging" of the hull. The diagonal feature of the American riders was designed not only to provide additional angular stiffness to the hull structure, but also to support the weight of storage in the ship's hold, which would include cables on the tier and storerooms of the ships' carpenters, armorers, and boatswains.

Humphreys did not specify the dimensions of the diagonal riders. The orlop deck beams against which the bird's mouth was to be fitted were sided 12 inches and moulded 10 inches, resting on deck clamps 3 inches

48. Humphreys, *Letterbook, 1797-1800*, pp. 285-286.
49. Ibid., p. 288.

thick.[50] Figure 5 on page 186 shows the structure of these diagonal riders. The concept of diagonal riders was to become more widely accepted in later years when hulls were lengthened and had sharper bow lines. Such structures were used extensively in the fast sailing clipper ships. [51]

Humphreys also specified the need for red cedar in building the vessels. The use of red cedar in all toptimbers was a common practice in building merchant ships. The wood is lighter in density than oak, is rot resistant, and is easily cut. The main purpose of its use on merchant ships was to decrease weight in the upper hull structure. In warship construction, where the need for solid bulwarks was paramount, red cedar was used because it was rot resistant and easily cut. In the case of the 74s of 1799, the placement of red cedar toptimbers was for through-hull fittings and scuppers. Humphreys' specifications showed which toptimbers were to be of cedar. Under the heading "Exceptions to General Descriptions" is a series of frame numbers and letters designating those specific futtuck members which run up to or are cut off at the lower or upper gun deck port cills. In one set of these instructions, "Names of Toptimbers on each side that cut off two & half feet above the lower deck port cill," the letter C is placed over six of the frame designators. Humphreys further instructed "The timbers with the mark C over them are not to be got of Live Oak, they must be of Red Cedar."[52]

But were only six such designations sufficient? In fact, Humphreys had included the forward frames by their being lined up with the after frames on the first line of the frame listing. This application increased the red cedar toptimbers by four.[53] Table 2, below, illustrates this arrangement.

50. Ibid., p. 287.
51. W. L. Crothers, letter to author, 28 March 1989.
52. Humphreys, *Letterbook, 1797-1800*, pp. 249-250.
53. P. Takakjian, letters and diagrams to author, 5 February and 14 August 1990.

Table 2

Names of Toptimbers on each side that cut off two & half feet above the lower deck port cill	c 1, B,	c 5,	c 6, C,	c 10, G,	c 14, K,	15, L,	19, P,	23, T,	24, W-	28,	c 32,	33,	37

FRAME DESIGNATORS	THROUGH-HULL FITTINGS
32	Main sheet sheave blocks
14, 10	Main pump scuppers
5, 6	Fore sheet sheave blocks and deck scuppers
1	Spritsail sheet sheave blocks and deck scuppers
B, C	Chesstree sheave blocks and deck scuppers
G	Deck scuppers
K	Main tack sheave blocks and deck scuppers

THE FATE OF THE 74S

The final years of the Federalist period saw a flurry of activity by Stoddert. The frigates were outfitted, design and timber procurement for the 74s began, a search was conducted for American made copper sheathing, and Stoddert surveyed and selected the sites for Navy yards. The latter two efforts were to produce the most long lasting results. Joshua Humphreys played a major role in three of the endeavors.

The need for Navy yards and docks had been apparent before the Federalists gained political power. Stoddert took advantage of the 25 February 1799 appropriation to seek yards and purchase two islands off the Georgia coast for preservation of the live oak source. Humphreys' *Letterbook, 1797-1800* contains a number of letters and reports from Humphreys to Secretary Stoddert which detail the studies made for yard selection. He interspersed these reports with mention of the other tasks which occupied his time. Thus, in his first letter to Stoddert of 4 August 1799, Humphreys described his busy schedule:

> Tomorrow I am off to the City of Washington to establish a navy yard where one of the 74[s] are to be built. I shall return in ten or twelve day[s] . . . the urgency of getting out all the public vessels in this port, drafting and arranging matters for the 74[s] has engrossed all my time, which I hope [you] will consider a sufficient apology for my neglect.[54]

On 15 August, Humphreys prepared his report to Stoddert on the ". . . most suitable place for a Navy Yard on the East branch of the River Potomac." Insufficient depth of water caused objections to two locations, but in a follow-up letter on 3 September, Humphreys pointed out that his ". . . objections must be dispensed with, that the Principal Navy Yard may be established at the seat of the Government."[55] Then, beginning in January of 1800, Stoddert had Humphreys embark on a visit to the seaports north of New York to evaluate sites. Humphreys made his usual thorough reports on all the sites to be considered from Connecticut to Maine.[56]

In the meantime, the live oak supply was still a problem. Thomas Shubrick of Bull Island, South Carolina, wrote to Secretary Stoddert on 4 February 1800, telling of the hardships encountered in cutting, shaping, transporting, and loading the timbers for the 74s aboard the small coastal vessels. He pointed out that one of the most severe problems was in determining the soundness of a tree, since decay attacked a tree through the tap root, thus preventing evaluation of the tree until it had been cut down. "These defective trees not only misguide us in our calculations," wrote Shubrick, "but greatly retard our progress & occasion a great loss of labor and time." [57] So by March of 1801, twenty-three-year-old Samuel Humphreys was serving as U. S. Inspector of the timbering operations for the 74s. One source states that he had been assigned this task by his father,[58] but other, more credible evidence points out that Secretary Stoddert made the appointment.[59]

Stoddert also continued to pursue American sources for the production of copper sheathing. During his tenure he loaned $76,000 to American firms trying to produce this material. On 28 June 1800, in a letter to Stephen Higginson & Co., Navy Agents in Boston, Stoddert stated that it was ". . . desirable to ascertain that Mr. Revere can manufacture sheet copper in quantity to the British patent, & it is highly probable that if he can, that he will be employed by the Public to manufacture to a large amount."[60] Paul Revere was to convert an old powder mill outside of Lexington with $25,000 of his own and $10,000 from a Stoddert loan. By 1801, Revere successfully rolled sheet copper.[61]

Early in 1801, the Senate ratified the peace treaty with France.[62] With no enemy left, the Federalists were confronted with the reality of reducing the size of the Navy. Stoddert proposed that the converted merchantmen be sold and thirteen frigates be retained: six in commission, seven to be "laid up in ordinary." He continued to press for the large ships, requesting that

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54. Humphreys, *Letterbook, 1797-1800*, pp. 233-234. On page 238 there is a letter to William Marbury regarding frame moulds (for 74-gun ships) being shipped to Washington.

55. Ibid., pp. 251-253, 254-255.

56. Humphreys, *Correspondence*, vol. 2. Contained in this file is a small notebook labelled "Remarks." This notebook contains the surveys made beginning in February 1800 of the following ports: New London, Connecticut; Newport and Providence, Rhode Island; Boston and Charlestown, Massachusetts; Portsmouth, New Hampshire; and Portland, Maine. The detailed notations include water depth and bottom conditions. Philadelphia, Washington, Norfolk, Charlestown, and Portsmouth were ultimately selected.

57. Virginia Steele Wood, *Live Oaking, Southern Timber for Tall Ships* (Boston: Northeastern University, 1981), pp. 40-41.

58. Carson, *The Humphreys Family*, p. 15.

59. W. M. P. Dunne, "Resource Data Files, United States Ships-of-the-Line: *Independence, Franklin, Washington*" (Unpublished Data Compilation, Hampton Bays, NY, 1988), cites Stoddert letter of 27 January 1800 to Samuel Humphreys.

60. D. A. Boorstin, *Hidden History* (New York: Harper & Row, 1987), p. 28.

61. Palmer, *Stoddert's War*, p. 121.

62. *NDQW*, pp. 393-409.

twelve 74's be built.[63] But his plan fell on deaf ears. On 3 March 1801, Congress passed the Naval Peace Establishment Act that meant the demise of the 74s of 1799. In early May of 1801, Joshua Humphreys, as Naval Constructor, received from General Samuel Smith, for Acting Secretary of the Navy Henry Dearborn, a brief letter which stated that "as it is not the intention of the government to commence building the 74-gun Ship immediately, you will enter into no further expense . . . as timber arrives, you will have it placed in a state of security and preservation."[64]

Robert Smith became Secretary of the Navy on 27 July 1801. In late October, in the language of the day, he politely dismissed Joshua Humphreys:

> The station which you hold, as Navy Constructor, has become unnecessary, and I am as the necessity, though very reluctantly of informing you that your services will be dispensed with after the 1st of November next . . . .
>
> You will, I trust be duly sensible how very painful it is to me to make to you this unpleasant communication — and be best assured Sir my sensibility is increased by considerations resulting from a knowledge of your worth — & the uniformly good and useful character since you have sustained in the employ of this Department . . . but it is hoped that should your services be hereafter required that you will not withhold them.[65]

One additional mention of the 74s in the record of the Federalist period is worthy of note. On 15 March 1800, Secretary Stoddert wrote to Samuel G. Adams of Botetourt County, Virginia. In an enclosure to a letter dealing with contract matters, Stoddert initiated a change in the broadside weight of the 74s. He called for twenty-eight 32-pounders, twenty-eight 18-pounders, and eighteen 9-pounders. Not only was this not authorized by Congress, but it lightened considerably the cannon weight of the original armament called for by Joshua Humphreys: thirty 24-pounders and sixteen 9-pounders being replaced by twenty-four 18-pounders and only two additional 9-pounders.[66] Apparently Stoddert doubted the capability of the ships to operate successfully with the fully tiered 32-pounders, but whether or not this would have been the armament had the ships been built is unknown.

After the Federalists

America's Quasi-War with France and the conflicts with the Barbary Powers between 1801 and 1807 engendered respect for the young U. S. Navy and brought considerable fame to the 1794 vintage ships. The experience gained by the ships during these two ventures established the foundation and tradition for a deep water navy. But the efforts to build large warships were delayed during the years of the Jefferson Adminstration, when those favoring a strictly defensive force came to power. They believed the United States should remain neutral from the Napoleonic Wars raging in Europe. In a letter to John Adams on 17 May 1813, Jefferson explained his position by referring to the losses suffered by the Danes in 1801 and the French and Spanish fleet in 1805. In 1801, the Royal Navy had raided the Danish fleet in Copenhagen, and Trafalgar had broken the combined fleets of France and Spain. Jefferson believed that a challenge by American warships could have resulted in a similar devastating loss.[67]

The delay was disastrous for the live oak timbers cut for the 74-gun ships of 1799. "Almost the only timber in the Navy yards," according to one historian, "was that which had been purchased by the department under Stoddert."[68] Prolonged storage under adverse conditions meant that not all the timbers would prove useful. Moreover, the pre-cut timbers severely limited major changes in the construction of the first 74s for the U. S. Navy. In a report to the House Chairman of Naval Affairs on 12 January 1801, Secretary Stoddert stated that:

> Ground has been purchased at Portsmouth [New Hampshire], Charlesto[w]n, near Boston — Philadelphia — the city of Washington, and Norfolk: and measures have been taken . . . in preparing Docks

63. Paullin, "Early Naval Administration Under the Constitution," p. 1030. See also *American State Papers* 1, p. 75.

64. Navy Department Archives, *General Letter Book* 5, Letter dated 1 May 1801.

65. Col. H. H. Humphreys, USA (Ret.), "Who Built the First United States Navy?" *Journal of American History*, New York Historical Society, Naval History Collection, 1st Quarter, (1916): 49ff. Col. Humphreys was the great-grandson of Joshua Humphreys. The article contains tracings or photographs of letters to and from Joshua Humphreys.

66. *NDQW* 5, p. 308.

67. D. Malone, *Jefferson and His Time: Jefferson the President, Second Term, 1805-1809*, vol. 5 (Boston: Little, Brown and Company, 1974), pp. 496-497.

68. C. O. Paullin, "Naval Administration Under Secretaries of the Navy Smith, Hamilton, and Jones," USNI *Proceedings* 37, no. 4 (1906): 1317 (hereafter Paullin, "Naval Administration under Smith, Hamilton, and Jones").

> for receiving the timber. . . . Timber may be preserved for ages in Docks & at little expense.[69]

But in February 1802, Secretary of the Navy Robert Smith requested status reports from the Boston and Portsmouth Navy Yards. On 6 April 1802 Samuel Brown, Navy Agent at Boston, reported that timber stored in a basin lay in water:

> . . . about eleven [feet] deep on an average, where the Timber, Planks &c are deposited and overflowed by sea Water every tide. The water it is understood hardens the Timber and destroys the acid it contains which is destructive to it in confined and impure air.[70]

A similar reply to the Secretary, dated 7 April 1802, from Woodbury Langdon, Navy Agent at Portsmouth, reported that ". . . the timber and planks in the docks are covered by salt water about three quarters of the time, but the water leaves them on the flats or mud, at low water."[71] The timbers remained in this state during the entire period between deliveries and actual use in 1813.

They were eventually used because interest in the ships revived as the country drifted toward war prior to and during the Madison administration. By 1811 the dominance of the Royal Navy at sea and its voracious demand for seamen had brought impressment to a critical level. In December of that year, Secretary of the Navy Paul Hamilton wrote to Langdon Cheves, Chairman of the House Naval Committee, and the quest for 74-gun ships began again.[72] Navy Department Chief Clerk Charles W. Goldsborough, who except for a two year absence during the War of 1812 served in that office from 1802 to 1843,[73] reached back to the early Stoddert letter of 29 December 1798 and brought the arguments up to date. The protection of coastal waters was cited again, as was the claim that this time the British, rather than the French, would have difficulty in depleting their force of 74s in European waters to mount an attack on American shores. As in the Stoddert letter, there was a request for docking facilities.[74]

But the movement toward larger ships occurred slowly, even under the duress of war. In 1812, Congressman Adam Seybert of Philadelphia posed several questions regarding the timbers for the 74-gun ships. In September Joshua Humphreys, who by that time had retired to a farm in Delaware County, replied:

> There had been delivered from 1800 to 1802 into the different Navy Yards cut expressly for the 74-gun ships the quantity annexed of which I suppose may be on hand.
>
> | | |
> |---|---|
> | Boston | 40,036 Cubic feet |
> | Portsmouth, N. H. | 18,706 ditto |
> | New York | 18,676 do |
> | Norfolk | 18,542 do |
> | Philadelphia | 20,426 do[75] |

On 14 April 1812, Captain William Bainbridge reported to Secretary Hamilton on the conditions at the Charlestown (Boston) Navy yard:

> The Navy yard here is very deficient in Timber for the repairs to the Frigate *Chesapeake*; except what belongs to the frame of the 74 — And even the State of that timber cannot be ascertained as it now lies in the mud — I have been informed that several pieces which have been hauled out have proven quite decayed; . . . I shall have it removed from its present situation & thoroughly examined — . . . it will be attended with some expence [sic] — but in my opinion indispensibly necessary.[76]

When he used the word "frame," Bainbridge was most likely referring to the pre-cut timbers for all of the frames comprising the entire hull.

Finally, on 2 January 1813, over a year after Secretary Hamilton's first request, Congress appropriated $2.5 million for construction of four 74-gun ships. Three ships were constructed under this authorization: *Franklin* at Philadelphia, *Independence* at Boston, and *Washington* at Portsmouth, New Hampshire. The fourth, *Columbus*, was to be built at the Washington Navy Yard, but was delayed by the British incursion into the city.[77] In the spring of 1813, Isaac Hull began construction of the 74-gun ship *Washington* at Portsmouth. On 23 April 1813, Hull wrote to the new Secretary of the Navy, William Jones, that one-

69. *NDQW, Naval Operations December 1800-December 1801*, pp. 81, 83.

70. *NDQW, Naval Operations*, 1802-1803, pp. 106-108.

71. Ibid., pp. 109-110.

72. William A. Dudley, ed., *The Naval War of 1812: A Documentary History* 1 (Washington DC: Department of the Navy, Naval Historical Center, 1985), pp. 153-160.

73. Paullin, "Naval Administration Under Smith, Hamilton, and Jones," p. 1293.

74. Palmer, *Stoddert's War*, p. 127.

75. Dudley, *Naval War of 1812*, pp. 457-458.

76. Ibid., pp. 91-93.

77. Navy Department, Navy History Division, *American Ships of the Line* (Washington, DC, 1969), p. 12.

third of the ship's live oak frame was missing.[78] Like Bainbridge, Hull used the term "frame" to designate the complete hull. The loss of live oak for the framing of the ships was serious in that northern white oak would ultimately have to be substituted.

During this same period the Samuel Humphreys draught of the 74-gun ships of 1799 was changed. The ship's original design by Joshua Humphreys had already been lengthened 5 feet in the spring of 1799 by his son Samuel. The changes made in 1813 were significant. The straightening of the sheer line by Secretary Jones raised the sheer line at midships and lowered the fore and aft deck lines. The ships were also to be widened to a moulded beam of 50 feet and the depth in the hold increased to 20 feet.[79] The ships also incorporated the frigate bows recommended by William Bainbridge.[80] The following table illustrates the changes made:

78. L. M. Maloney, *The Captain from Connecticut: The Life and Naval Times of Isaac Hull* (Boston: Northeastern University Press, 1986), p. 215.

79. Ibid., p. 214.
80. Dearborn, *Life of William Bainbridge*, pp. 181-185.

Table 3
COMPARISONS OF 74-GUN SHIPS[81]

	Samuel Humphreys, 1799	*Franklin*, 1814
Length Between Perpendiculars	183 ft.	187 ft. 10¾ in.
Length of Keel	150 ft. 1 7/8 in.	155 ft. 5/8 in.
Quarter Galleries	2 tiers	1 tier
Height of Quarter Galleries	20 ft. 3 in.	16 ft.
Length of Quarter Galleries	16 ft.	16 ft.
Transom (Vertical Measurement)	17 ft. 6 in.	13 ft. 2 in.
Number of Guns Allocated		
Lower Gun Deck	28	32
Upper Gun Deck	30	32
Forecastle	12	10
Quarterdeck	4	16
Totals	74	90

Figure 6 on pages 192-193 shows a drawing of *Franklin* which illustrates the wartime construction. This draught is by John Lenthall, Naval Constructor between 1841-1861. The draught was made while he served as an apprentice between 1823-1826.

The lack of useable live oak plagued Bainbridge and Hull during the months of construction. The 40,000 cubic feet delivered to the Boston yard was initially believed sufficient for two hulls, but such was not to be the case. Nor did the supply at Portsmouth provide sufficient live oak for *Washington*. Aside from rot and decay caused by inadequate storage protection, the depletion of the timber supply for ship repairs and dock construction had left both yards short of the needed timbers.[82]

Hull raised the fore and aft hull levels of *Washington* in an attempt to regain the curve of the sheer line. In addition he substituted seasoned northern white oak for the lower deck pine beams.[83] The white oak, while plentiful,

81. NARG 19, 40-15-6J, for 74-gun ship of 1799; *American Ships of the Line*, p. 13, for *Franklin*.

82. Maloney, *Captain from Connecticut*, pp. 215-218.
83. Ibid., p. 216.

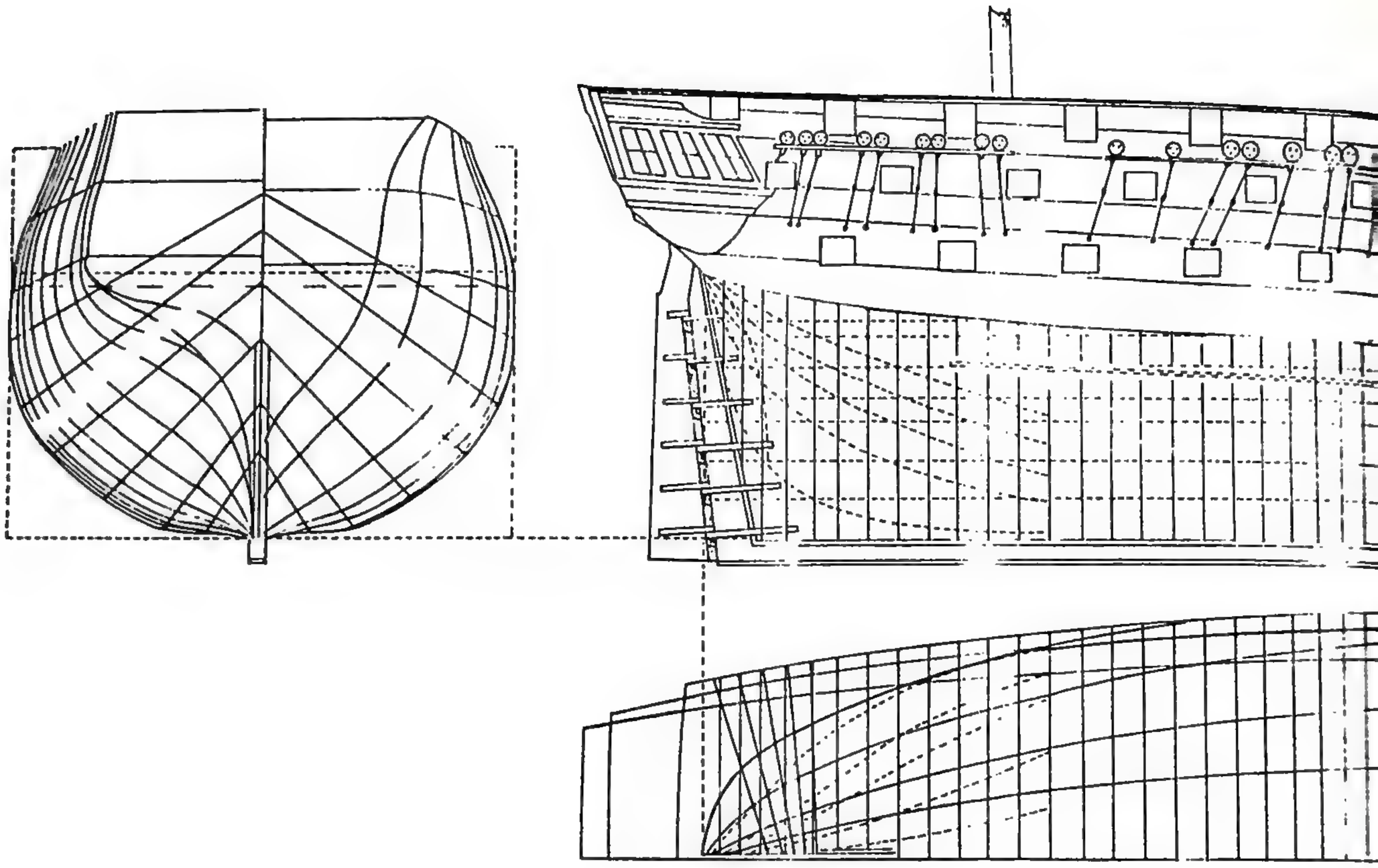


Figure 6: Draught of *Franklin* by John Lenthall, 1824. Traced by the author from a microfiche copy. Courtesy of the Franklin

increased the displacement weight of the hull,[84] but its use for frames enabled the two ships to be completed.[85]

Independence proved to be the most vulnerable of the three ships. The severest criticism of the ship was that the lower gun deck ports were too near the water line. On 17 July 1814, Bainbridge wrote to Joshua Humphreys following the ship's launch on 22 June 1814 and expressed concern over the height of gunports out of water:

> At launch the hull drew nineteen feet of water aft and fourteen feet forward and . . . the 4th port from aft was 10 feet out of the water & the 5th port from forward 12. [After taking on fifty-five tons of masting, guns, and ballast] she now draws 18' 2" aft and 15' 3" forward . . . and the after port, which is the lowest port to the water, 9 feet. This brings the lower deck ports nearer the water than I would have them.[86]

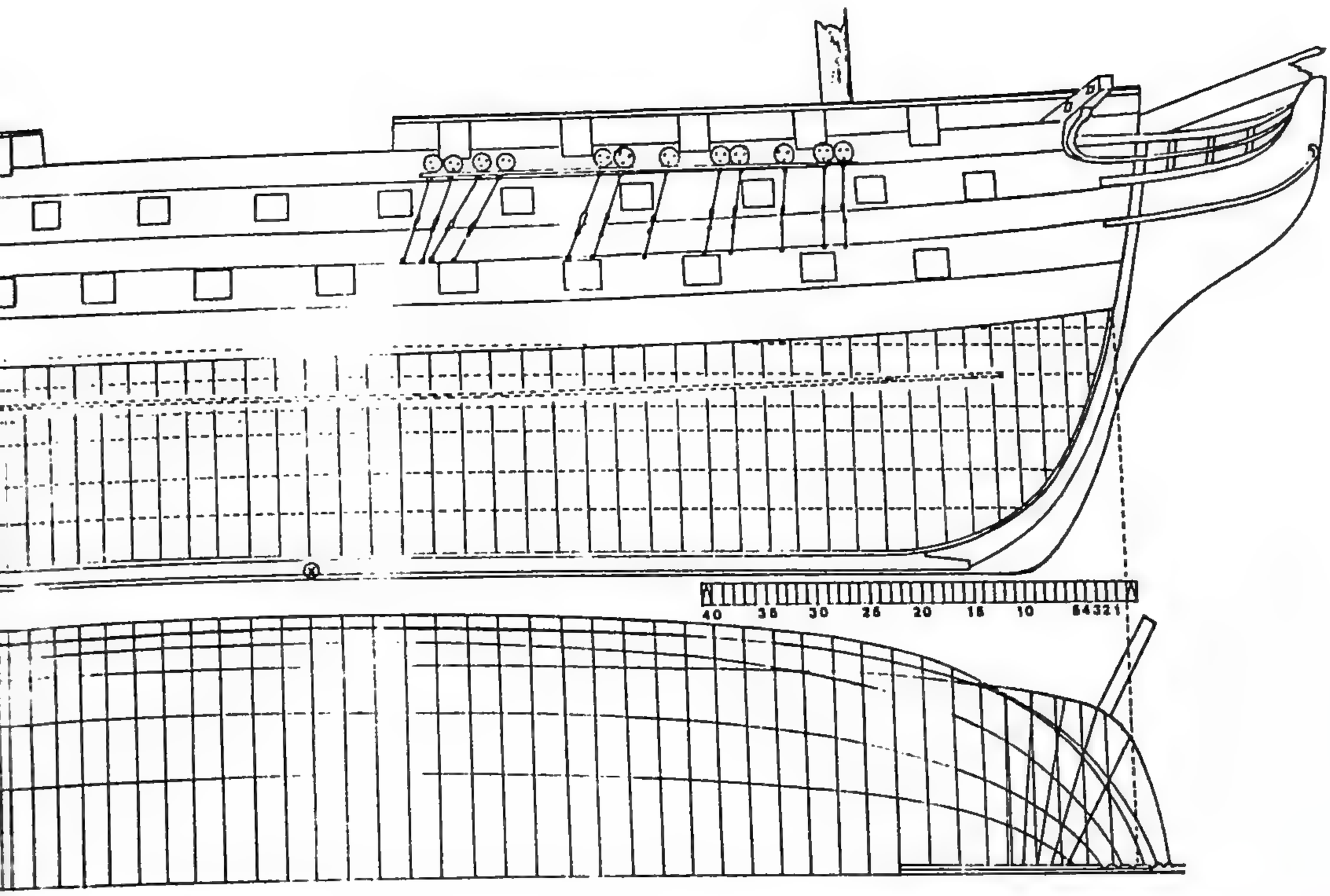
84. Ibid.
85. Ibid., p. 219.
86. Humphreys, *Correspondence, 1775-1831*, 3 vols., 1: 118.

A few years later, on 24 June 1817, Joshua Humphreys expressed further concern about the ships' draft, noting that *Franklin*'s best sailing trim was 22 feet 6 inches aft and 21 feet 6 inches forward, and the height of the lower port cills was 5 feet 7 inches.[87]

Commodore Bainbridge's fears about *Independence* were soon realized. On her maiden voyage to the Mediterranean, in spite of substituting 24-pounders from *Constitution* and removing her carronades, "her lower gunports were caulked in to overcome the problem of her deep draft in crossing the Atlantic."[88]

When Joshua Humphreys designed the 44-gun frigates in 1794, he gave them an advantage by mounting 24-pounders as opposed to the 18-pounders carried by the large British frigates. This advantage carried through the War of 1812. His original design for the 74-gun ships incorporated one tier of 32-pounders, but by 1800 the

87. Humphreys, *Notebook*, p. 285.
88. *American Ships of the Line*, p. 13.



Institute and Congressional Information Services, Inc., Lenthall Collection Numbers 455-A-1; 455-B-1.

British were beginning to mount 32-pounders on all decks of their 74s. Thus, the earlier advantage of the frigates was not carried through on the 74s. The U. S. Navy was able to counter only by attempting to mount an increase in cannon on each ship. The plight of *Independence* was the result of that thinking. The attempt to provide substantial fire power was flawed by pre-cut timbers limiting the design changes needed to a ship originally designed to operate singly as a surface raider, or in small roving groups.

Additional causes for the lack of freeboard must center on the condition of the live oak that had been improperly stored for over a decade. First, the buoyancy of the live oak timber had been reduced by inadequate, partial in-water storage over a protracted period of time. The second cause involved the straightening of the sheer. While this lowering of the forward and aft deck lines and raising of the midships line might not have been a severe problem alone, the additional cannons with their added weight combined to make it so.

Further tests were run following *Independence*'s voyage to the Mediterranean. The ship was loaded for only five months at sea, but with her allocated armament remounted. This too proved unsuccessful: "Some of the scuppers of her lower gun deck ports sank beneath the water."[89] *Independence* was laid up in ordinary until 1836 when she was razeed down to a fine sailing 54-gun frigate.[90]

The other two 74-gun ships also had short operational lives. *Franklin* was placed in ordinary on 14 September 1824 and remained inactive until 1843 when she became a receiving ship at the Boston Navy yard. She was broken up on 16 August 1853 at Portsmouth, New Hampshire.[91] *Washington* was placed in ordinary in 1820 and broken up in 1843.[92]

Still, in spite of their short lives and unhappy endings, the 74-gun ships of 1799 provided an important transition between the well known frigates of the Federalist period

89. Ibid., pp. 14, 16-17.
90. Ibid., p. 20.
91. Ibid., pp. 13-15.
92. Ibid., pp. 18-20.

and the attempt to build larger warships (or 74-gun ships) during the War of 1812. As such, they represent an important but little known chapter in the early history of the United States Navy.

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The Grand Haven Rig: A Great Lakes Phenomenon

JAY C. MARTIN

THE traditional tale of the invention of the Great Lakes indigenous "Grand Haven" or "jackass" rig holds that, sometime in the 1890s, a captain of a three-masted schooner laid up in a Lake Michigan port found during spring fit-out that the middle mast of his vessel was unserviceable due to extensive decay. In a hurry to get away from the dock as early as possible in the shipping season, this indomitable captain promptly cut the rotten mast off a few feet above the deck and rigged a makeshift sail from a supporting stay which he ran from the stump of the mainmast to the trestle trees of the mizzen mast. The resulting arrangement of masts and sails soon proved to be just as good as, or in some respects an improvement upon, the rig that his three-masted schooner formerly carried. Despite its unorthodox beginning, the advantages of this rig soon became apparent to other mariners, and it was eventually adopted on a number of three-masted schooners. Since a large number of vessels rigged in this manner sailed from the port of Grand Haven, Michigan, or because the accidental metamorphosis occurred at that locale, this rig became known as the "Grand Haven rig."[1]

Contrary to this popular anecdote regarding its development, the Grand Haven rig was not an amusing incident of maritime folklore, but a conscious and intentional technological alteration of the commonly utilized Great Lakes schooner rig. This alteration was influenced by specific economic conditions in a period characterized by the transition from the supremacy of sail to steam powered vessels on the Great Lakes. Although the expense of maintaining and operating three-masted schooners was certainly a factor in the development of this rig, many other factors also played key roles.[2]

The Grand Haven or jackass rig is an arrangement of masts and sails in many ways similar to the rig carried by the average contemporary Great Lakes schooner. Simply stated, the Grand Haven rig was a fore-and-aft rig in which the two masts were set unusually far apart, leaving a considerable gap between the after end of the foresail and boom and the mizzen mast. This area was filled with a mizzen staysail which was set on a stay running roughly from the trestle trees of the mizzen mast to a point just aft of the termination of the foreboom. Both the mizzen and foremasts set a gaff sail and gaff topsail, and a fore staysail was set between the foremast and the stem. The vessel carried a bowsprit and usually a jibboom with two or three jibsails. Although it has its own esthetically pleasing qualities, the gap between the masts (even when the staysail was set) gave the impression of something missing, or of a much less lofty rig than that carried by conventional schooners.[3]

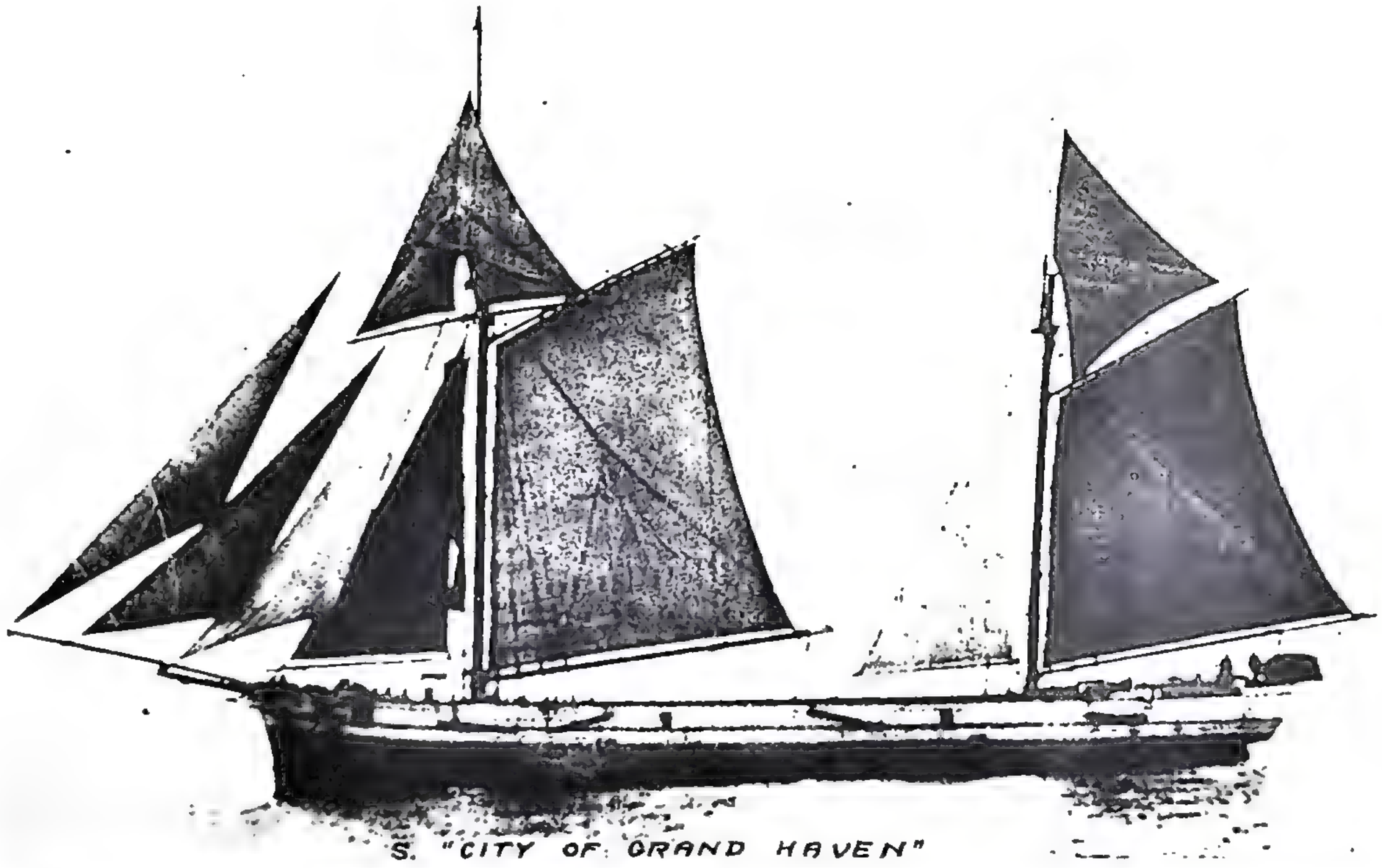
The Grand Haven rig provided a viable alternative to the two extreme applications of contemporary Great Lakes sailing vessels; the use of the two-, three-, four-, or even five-masted schooner rig, or the reduction of such vessels to tow barges. These barges were also known as schooner-barges because they carried several short masts with gaff and stay sails which were used to ease the strain on the steamer towing them, thereby reducing her fuel consumption and increasing overall speed. The Grand Haven rig allowed a vessel to sail more or less independently, while conversion to a barge did the opposite, generally ending the independent operation of a sailing vessel through the destruction or reduction of her primary motive power, her sails.[4]

1. Herbert L. Harley, "The Ketch Rig on the Lakes," *The Rudder* 12, no. 2 (1901): 33.

2. C. H. J. Snyder, "The Grand Haven Rig" *Toronto Evening Telegram*, 24 February 1934.

3. Harley, "The Ketch Rig on the Great Lakes," pp. 33-34; Snyder, "Grand Haven Rig"; Historic American Merchant Marine Survey, Smithsonian Institution, Washington, DC.

4. Harley, "The Ketch Rig on the Great Lakes," pp. 33-34; Snyder, "Grand Haven Rig."



The 127-foot *City of Grand Haven*, built in 1872, was one of the vessels which may have originated the Grand Haven rig. Photo courtesy of the Western Lake Erie Historical Society, Toledo, Ohio.

The Grand Haven rig developed in a period of limited and steadily decreasing opportunities for Great Lakes sailing vessels. The schooner rig had become the choice of Great Lakes mariners earlier in the century because it was able to work to windward more efficiently and was easier to use in light or variable winds, or in restricted waters where maneuverability was crucial to safe and efficient operation. This latter feature was particularly important on the Great Lakes where there are few natural harbors; most nineteenth century ports consisted of narrow river mouths characterized by shifting sand bars and currents, as well as bluffs and foliage that made inshore winds uncertain and variable. Since the Lakes generally lacked sufficient sea room to allow vessels to run out a storm, a more weatherly hull in conjunction with a highly maneuverable and easily handled rig was the choice of most sailors.[5]

These regional environmental influences, in combination with prevailing economic conditions, led to the selection of design modifications more fitting to the Lakes, gradually separating Lake vessels from their cousins on saltwater. The need to negotiate the small shallow rivers and harbors led to the adoption of easily handled rigs and shallow draft hulls in conjunction with one or more centerboards, a configuration that eventually became established as the standard for the region.[6]

The size and arrangement of sails was also different on the Lakes. An example of this is the use of the "raffee" topsail, a triangular sail which was set from the top of the foremast and was stretched by a yard attached at the trestle trees. Easily handled by a small number of men, this sail was indispensable for sailing with the wind and proved equally valuable as a headsail for a vessel changing tacks. The raffee became especially useful as three-masted schooners had a tendency to be slow in stays. The raffee provided sufficient power to pull the head around when changing tacks.[7]

The raffee topsail was sometimes supplemented by a lower square sail called a "runner" which could be used when running with the wind.[8] This sail was set from the

5. Harley, "The Ketch Rig on the Great Lakes," pp. 33-34.

6. E. P. Morris, *The Fore-and-Aft Rig in America* (New Haven: Yale University Press, 1927), pp. 168-170.

7. George A. Cuthbertson, *Freshwater: A History and Narrative of the Great Lakes* (New York: The Macmillan Company, 1931), p. 233.

8. E. P. Morris, *The Fore-and-Aft Rig*, p. 170; Harley, "The Ketch Rig on the Great Lakes," p. 33.

yard on the foremast just below the raffee and provided additional pulling power, especially in light airs. With fore-and mainsails set wing and wing, and a raffee and runner set as well, a vessel could run with the wind with an efficiency comparable to that of a square-rigged vessel.[9]

The three-masted schooner which developed on the Great Lakes was characterized by a mizzen mast set unusually far aft and usually of smaller height than the main and foremasts. The mizzen was often stepped right through the cabin aft and was sometimes given a more rakish angle than either the fore or main masts. This arrangement had the advantage of breaking the sails into smaller, lighter, and correspondingly less expensive units that were more easily handled by a small crew. These vessels were efficient coasters because of their handiness, low operating costs, low initial investment, and general efficiency in expenditure of labor.[10]

The disadvantages of this three-masted rig were that it was often slow in stays and that the after sails tended to blanket the forward sails when the vessel attempted to sail with the wind astern. These vessels were also difficult to steer because the blanketing action of the main and mizzen sails kept the headsails from drawing well enough to balance and steady the vessel. These problems were compounded, rather than eliminated, when additional masts were added.[11]

Despite the obvious difficulties presented by the three-master, this rig continued to be used on the Great Lakes in the late nineteenth century because the need for shipping to carry bulk products was fairly constant. Later, when competition from steam powered vessels and railroads markedly reduced freight rates, owners and operators of sailing vessels began to look for ways to make their vessels more efficient. This could be done in a number of ways, including the reduction of vessels to barges, the addition of steam or internal combustion engines, or the alteration of rig. In the latter case, this often meant reduction of rig from three masts to two.[12]

The problems inherent in reducing a three-masted vessel to two masts were several. First, a reduction in the number of masts generally meant that the remaining masts would have to be repositioned, which was an expensive and time consuming process. Second, if the rig was not significantly reduced in magnitude through reduction of necessary sails and equipment, little appreciable gain had been made unless the vessel became much easier to handle. Third, the new rig had to allow the vessel to maintain a speed comparable to that which she had formerly made in order to sustain her performance.[13] The Grand Haven rig was an important innovation since it allowed for the alteration of vessels with three masts to a more efficient rig which maintained performance through a reduction in overall area of sail set, with a minimal rearrangement of current rigging.[14]

The Grand Haven variation spread two masts unusually far apart and placed a staysail in the gap between the foresail and the mizzen mast. This arrangement of masts, sails, and rigging left the midship deck area of the vessel clear for cargo loading operations and storage, much more so than in other vessels of their size.[15] The greater freedom from interference from masts and sails may have paid dividends in more than just convenience. There is evidence to indicate that vessels with these features enjoyed reduced labor costs for loading operations because of the greater ease of conducting these activities.[16] Also, the additional deck area likely made up for the space taken up in the hold by the centerboard box, one of the primary deficiencies of a centerboard vessel engaged in the lumber trade.[17]

Although it is generally conceded that this rig was adapted to existing vessels, it is equally important to note that vessels were constructed or reconstructed with the Grand Haven rig in mind. Schooner-barges were constructed in the early 1870s with an arrangement of masts and sails that was characterized by a greater than usual separation of two masts that not only allowed greater uninhibited space for deck cargo, but also tended to reduce the amount of interference caused by the rigging during loading and unloading operations.[18] This arrangement later became standard on the Great Lakes schooner-barges.[19]

The development of the Grand Haven rig has been traced to the careers of the schooner-barges *Wolverine* of

9. Harley, "The Ketch Rig on the Great Lakes," p. 33.

10. Ibid.; Howard I. Chapelle, *The History of American Sailing Ships* (New York: Bonanza Books, 1935), pp. 259-260; C. H. J. Snyder, "Chips and Ships in the Sawdust Trail," *Toronto Evening Telegram*, 15 October 1949.

11. Harley, "The Ketch Rig on the Great Lakes, p. 33; Snyder, "Chips and Ships."

12. Paul C. Morris, *Schooners and Schooner Barges* (Orleans, Massachusetts: Lower Cape Publishing, 1984), p. 2; Chapelle, *History of American Sailing Ships*, p. 219).

13. Harley, "The Ketch Rig on the Great Lakes," pp. 33-34; Snyder, "Chips and Ships."

14. Harley, "The Ketch Rig on the Great Lakes," p. 34; Snyder, "Grand Haven Rig," "Chips and Ships."

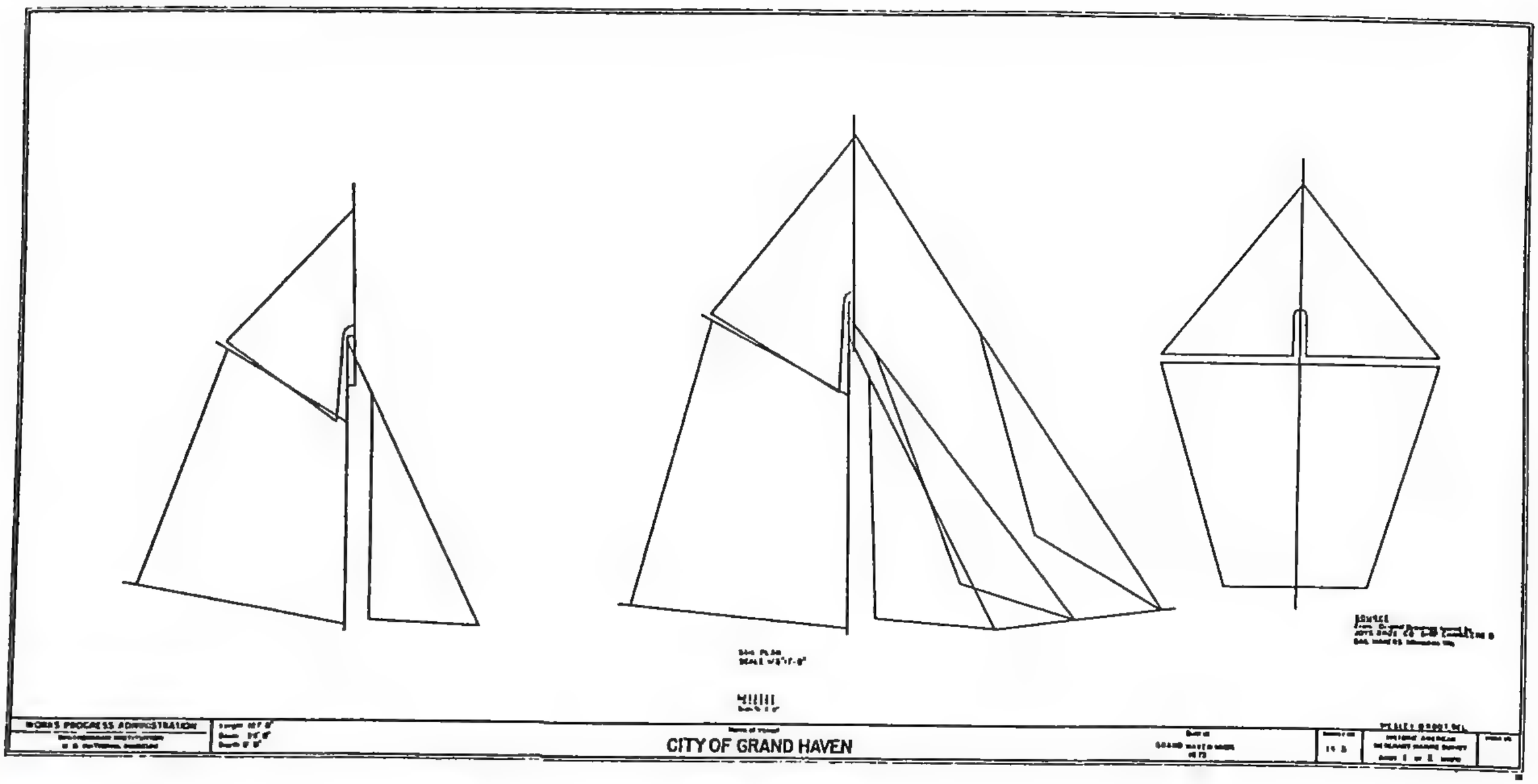
15. Ibid.

16. C. Patrick Labadie, personal communication, 25 July 1988.

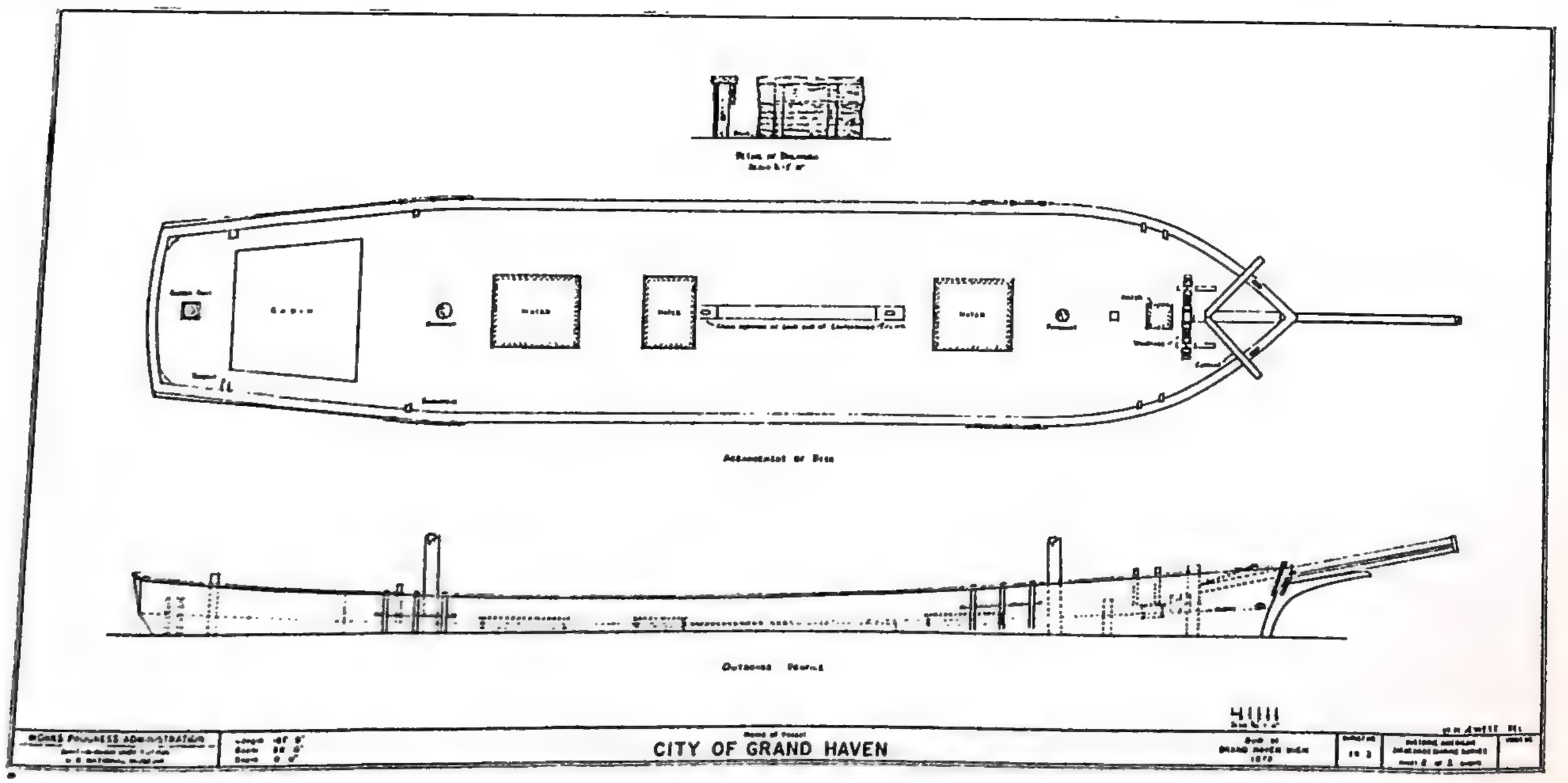
17. Chapelle, *History of American Sailing Ships*, pp. 259-260, 263.

18. Harley, "The Ketch Rig on the Great Lakes," p. 34; Snyder, "Grand Haven Rig," "Chips and Ships."

19. Paul C. Morris, *Schooners and Schooner Barges*, pp. 1-2.



Sail plan (above) and outboard profile/deck plan (below) of the *City of Grand Haven*, courtesy of the Historic American Merchant Marine Survey, Smithsonian Institution.



1871, the *City of Grand Haven* of 1872, and the *City of Grand Rapids* of 1873, all of which were built by Duncan Robertson of Grand Haven, Michigan, for Thomas W. Kirby of the same port. At approximately 120 feet in length and 195 to 230 gross tons, these sister ships had a similar history of ownership and were officially rerigged as schooners when topmasts were added early in 1884. Since they were built in Grand Haven and sailed for many years from that port (one even carried the name of the port), it is quite reasonable to suspect that they may have been the originators of the Grand Haven rig.[20]

Several prominent marine historians have suggested that the vessels built by Duncan Robertson in Grand Haven from 1871 through 1873 were responsible for developing this type of rig. Among these, Herman Runge pointed out in his notes on the Grand Haven rigged vessel *J. V. Taylor* that, although originally a three-master:

> In the early part of this century her main mast was taken out and she carried only the main and mizzen masts and had what was called a Wolverine rig, as the *Wolverine* was the first one to be rigged in that manner.[21]

Interestingly, in 1873 Duncan Robertson built a vessel named the *Willie Loutit* which was initially enrolled as a schooner and was never officially rerigged. Although no records have been found to indicate the details of her rig at the time of launch beyond that of a two-masted schooner, it is evident from nineteenth century photographs that she shared nearly identical hull lines with her sisters and also carried the Grand Haven rig. Since no record of a change of rig has been found for the *Willie Loutit*, it is possible that she was the first Grand Haven rigged schooner.[22]

This theory is disputed to some extent by information which credits Captain T. W. Kirby with the invention of the Grand Haven rig. This theory is based upon the remembrances of James H. Safford, a Grand Haven, Michigan resident involved in local marine affairs. He is quoted in the *Toronto Evening Telegram* of December 21, 1935 as stating:

> The Grand Haven ketch rig, I think, was the result of one of T. W. Kirby's schooners losing her mainmast in a squall; found she worked so well under fore and mizzen he changed several of his three masters to the ketch rig, and built two or three with fore and mizzen only. They needed fewer men and it was easier stowing lumber.[23]

Mr. Safford goes on to state that in T. W. Kirby's fleet of approximately one dozen vessels:

> All his craft which were not "ketch" rigged were bald headed; that is minus topmasts and jibbooms. He even had a three-masted ketch — main and mizzen aft and a lot of space amidships.[24]

Although it is possible that Kirby was the force behind the invention of the Grand Haven rig, and that he may have formed the idea when one of his vessels was accidently dismasted, no further evidence has been found to support this conclusion. What is known is that Kirby was an early proponent of the tow barge system and that he naturally wanted his barges to carry as much cargo as possible at minimal expense. With these needs in mind and with money to spend on new vessels, it is equally logical that Kirby would have discussed his ideas with the local shipbuilder, Duncan Robertson. One suspects that Captain Kirby outlined his ideas to Robertson and then allowed him the freedom to integrate these ideas into the design and construction of a new type of vessel. Most of the vessels of this type were originally used as barges and only later received topmasts and jibbooms, thereby becoming Grand Haven rigged schooners.[25]

The *Willie Loutit* was the only one of Robertson's four boats of this type originally rigged as a schooner. Ironically, she was also the only vessel not built for Kirby.

20. Bureau of Marine Inspection and Navigation Enrollments, Grand Haven, Michigan, 22 May 1871, 24 April 1872, 3 September 1873, and Chicago, Illinois, 10 April 1884. The *Wolverine* was the smallest of the vessels at 117 feet x 25.4 feet x 8.4 feet and 195.72 gross/185.94 net tons. The *City of Grand Rapids* was the next largest at 124.4 feet x 26 feet x 9.1 feet and 225.96 gross/214.67 net tons. Her nearly identical sister the *City of Grand Haven* was the largest at 127 feet x 26 feet x 9 feet and 230.2 gross/218.73 net tons.

21. *J. V. Taylor* File, Herman Runge Collection, Milwaukee Public Library, Milwaukee, Wisconsin.

22. Enrollments, Grand Haven, Michigan, 2 May 1873, and Cleveland, Ohio, 31 March 1908; John E. Poole Collection, Institute for Great Lakes Research, Bowling Green State University, Perrysburg, Ohio. *Willie Loutit* was a 116-foot 5-inch x 25-foot x 8-foot 1-inch schooner of 181.75 gross/172.66 net tons. She served primarily in the lumber trade on Lakes Michigan and Huron until she was abandoned in 1908.

23. C. H. J. Snyder, "Christmas Cheer 'Out-A Detroyit' and Elsewhere," *Toronto Evening Telegram*, 21 December 1935.

24. C. H. J. Snyder, "Knights and Ladies — and Still More Sawdust," *Toronto Evening Telegram*, 18 January 1936.

25. Leo C. Lillie, *Historic Grand Haven and Ottawa County* (Grand Haven, Michigan: Leo C. Lillie, 1931), pp. 336-337. Lillie states that Thomas W. Kirby did possess spare capital at this time as he paid for the construction of the first Catholic church in Grand Haven in 1872. In 1873 he cooperated with Ed Killean in the construction of the Kirby House Hotel and he became mayor of the city of Grand Haven in 1889.

She was built for William Loutit of Grand Haven, which suggests that Captain Kirby's barge innovation was expanded upon by Captain Loutit in conjunction with Robertson, technically making Loutit and Robertson the co-creators of the Grand Haven rig.[26]

Certainly as the longest running of the four vessels built by Robertson at Grand Haven, the *City of Grand Haven* had the opportunity to influence the development of both the barge and schooner rigs. That she influenced some owners to convert their vessels to the Grand Haven rig is shown by an excerpt from the *Sheboygan (WI) Evening Telegram* of April 3, 1894:

> The schooners *Vega* and *H. D. Moore* have been rigged out like the schooner *City of Grand Haven*. Vessels fitted out in this style are much easier to handle.[27]

Although the date and place of origin of the Grand Haven rig are problematic, it is possible to gain an understanding of its development by tracing the careers of the vessels which carried it. However, since the rig was largely undifferentiated from the conventional schooner rig in official enrollments, insurance lists, or newspaper marine columns, its origins are extremely difficult to trace. The earliest known contemporary written reference to the rig as a unique entity came from the above 1894 *Sheboygan Evening Telegram* article. For earlier documentation it is necessary to rely upon historic photographs and evidence gleaned from research of the careers of vessels known to have been Grand Haven rigged.

Other historians have attempted to determine the origins of this rig, but have generally adhered to the folklore of its "accidental" invention. Herbert L. Harley supports an 1894 date for the invention of the rig in his February 1901 article in *The Rudder*, when he relates the traditional story of the rotten mainmast and suggests that the event occurred at Grand Haven, Michigan about five years previously. The validity of this incident is challenged by C. H. J. Snyder in 1934, but he offered no better estimate as to the date of the rig's development.[28]

Clearly, the Grand Haven rig was established and was gaining prominence by the mid-1890s, but it must have originated earlier in order for it to have proven its effectiveness through practical application. In all likelihood, Robertson's *Wolverine* was the first vessel to utilize successfully the characteristic separation of masts, while the *Willie Loutit* became the first to be built as a schooner rather than bald-headed schooner-barge.

The classification of the rig as a specific type has also led to some debate among marine historians. This debate concerning the purest form of the Grand Haven rig centers around the question of whether the rig is actually that of a schooner or a ketch. The schooner rig is generally acknowledged to be the parent form by all concerned marine historians, but some suggest that the offspring is actually a type of ketch because of its shortened mizzen mast and the smaller sails that this mast carries. Although this form of the Grand Haven rig is undoubtedly of the ketch variety, not all vessels with the rig had shortened mizzen masts. A number of these vessels actually had mizzens and associated sails which were comparable in size to their foremasts and sails. These vessels are more akin to schooners than to ketches.[29]

The division of the two types devolves into a type of hair splitting of little practical value. What is clear is that both the ketch and schooner varieties, although slightly different, are of the Grand Haven rig and should simply be regarded as such. To do otherwise would be an oversimplification or overdivision that offers little constructive contribution to the study of maritime history. By recognizing the Grand Haven rig as a legitimate development in the history of the American sailing vessel, one acknowledges that some innovator established a new and useful rig that was at least mildly successful in prolonging the life of the sailing commerce carrier on the Great Lakes. Note should be made that other alterations of the schooner rig, such as the multi-masted schooners produced by East and West Coast shipyards, succeeded primarily because newer and larger vessels could be constructed and operated in those waters, while the Grand Haven rig kept small outdated sailing vessels in service until the end of the sailing ship era.[30]

The greatest deficiency of the Grand Haven rig lies in the impracticality of its application to large hulls. The increasing need for larger carrying capacity led to the demise of the Great Lakes sailing vessel. The Grand Haven rig, because it was definitely a two-masted rig, could not be efficiently applied to a hull sufficiently large to be of competitive value in the early twentieth century.

26. Snyder, "Knights"; Enrollments, Grand Haven, Michigan, 2 May 1873.

27. *Sheboygan Evening Telegram*, 3 April 1894: 2.

28. Harley, "The Ketch Rig on the Great Lakes," pp. 33-34; Snyder, "Grand Haven Rig."

29. E. P. Morris, *The Fore-and-Aft Rig*, p. 158; Harley, "The Ketch Rig on the Great Lakes," pp. 33-34; Snyder, "Chips and Ships," "Grand Haven Rig." Historic photographs indicate that at least *Minerva*, *H. D. Moore*, *J. H. Stevens*, and *J. V. Taylor* had masts of roughly equal height.

30. Paul C. Morris, *Schooners and Schooner Barges*, pp. 1-2.

Even if the rig could have been expanded to such proportions, it would have had little value on the Lakes since sailing vessels were losing their major markets to the more reliable steamers. The small ports which a larger Grand Haven rigged vessel would have serviced were not able to handle such large vessels, and so it is not surprising that none were built.[31]

The size of the nineteen vessels that are confirmed through historic photographs to have carried the Grand Haven rig range from the 95-foot x 26-foot x 6-foot 2-inch *Josephine Dresden* of 84 gross tons to the 162-foot 4-inch x 33-foot 6-inch x 12-foot 4-inch *Harvey Bissell* of 496 gross tons. The average gross tonnage was 195.69 and all were built between 1856 and 1882.[32] Perhaps as many as 20 percent of the Great Lakes schooners in service between 1890 and 1900 carried the Grand Haven rig.[33]

Those sailing vessels that did survive in service on the Lakes did so only as long as there were small ports that could be serviced, and as long as the lumber trade continued to be lucrative enough to make the effort worthwhile. Since the accessible lumber along the coastal areas of the Great Lakes was nearly depleted by the late 1920s, sailing vessels no longer had a trade to occupy them, and therefore became obsolete.[34]

The details of the geographic diffusion of the rig are, like the details of its origin, unclear. All vessels known to have carried the rig served in the lumber trade sometime between 1870 to 1910, the period that most vessels were converted to, or built with, the Grand Haven rig. Most of these vessels served almost exclusively in the Lake Michigan and Lake Huron lumber trade, while several also served on Lakes Erie and Ontario. At least one vessel, the *John Magee*, made the rig an international affair when she was transferred to Canadian ownership in 1906.[35]

Two vessels may have taken the rig as far as the Atlantic Coast of the United States. These two vessels, the *J. A. Holmes* and the *Minerva*, were taken out to the coast in 1916 as World War I sparked a wartime shipping shortage.[36] Neither vessel survived long on saltwater as the *J. A. Holmes* foundered off Barnegat, New Jersey, on September 8, 1917, and the *Minerva* became a total loss after stranding on Anastasia Island, Florida, on June 25, 1920.[37] Although both vessels carried the Grand Haven rig prior to their departure for saltwater, no evidence has been found to confirm that they took this rig with them. If they did so, they were probably the only vessels to carry this rig off the Great Lakes, since no indication of a similar saltwater adaptation has been found.

The last vessel known to have carried the rig on the Great Lakes was also one of its earliest adherents and possibly its namesake. The *City of Grand Haven* continued to be active until 1925, and returned briefly to service in 1928. She survived nearly to the end of the era of Great Lakes sail, the last lakes-built vessel in commercial operation being *Our Son*, which was lost off Big Point Sable, Lake Michigan, on September 26, 1930.[38]

The Grand Haven rig remained almost exclusively confined to the Great Lakes, where it saw its primary service on Lakes Michigan and Huron. Although it is difficult to quantify, there is considerable evidence that this unique arrangement of masts and sails helped to prolong the useful life of many of the sailing vessels still commercially active on the Great Lakes at the turn of the century. However, confirmation of this impact must await further study of the maritime history of the Great Lakes, and especially the economic, technological, and social factors which dictated the decline of sailing vessels during the late nineteenth and early twentieth centuries.

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31. E. P. Morris, *Fore-and-Aft-Rig*, p. xviii.

32. Enrollments, Toledo, Ohio, 27 June 1866, and Sandusky, Ohio, 10 July 1875; Louden G. Wilson Collection, Institute for Great Lakes Research, Bowling Green State University, Perrysburg, Ohio. The average gross tonnage was calculated using the gross tonnage of each vessel at the time that she was Grand Haven rigged. Since it is not always possible to establish the exact date that the Grand Haven rig was adopted, and since several vessels had significant changes in tonnage over the course of their careers, this calculation should be used as an estimate only.

33. Jay C. Martin, "The Grand Haven Rig: An Adaptation of the Great Lakes Schooner Rig in the Transitional Period Between the Supremacy of Sail and Steam" (M. A. Thesis, Bowling Green State University, 1988), pp. 71-74.

34. Jerome King Laurent, "The Development of Harbors, Waterborne Shipping and Commerce at Six Wisconsin Ports on Lake Michigan Through 1910" (Ph. D. diss., Indiana University, 1973), p. 460.

35. Enrollments, 31 March 1906; *Canadian List of Shipping* (Ottawa: J. O. Patenaude, 1937), p. 209. *John Magee* (137.5 feet x 26.2 feet x 11 feet and 331.73 gross tons American register) was owned by Canadians Joseph and Albert Robillard of Montreal until she was finally dropped from registry in 1938.

36. *Duluth Herald*, 8 June 1916.

37. *Merchant Vessels of the United States* (Washington: GPO, 1918, 1921).

38. Jay C. Martin, "A Star to Steer Her By: The Last Season of the *City of Grand Haven*" *Michigan History* (July/August 1990): 43-47; Jay C. Martin, "Long in the Trade: The Career of the Lumber Schooner *City of Grand Haven*," *Anchor News* (July/August 1990): 64-71.

Jay C. Martin is director of the Western Lake Erie Historical Society of Toledo, Ohio, and president of Great Lakes Visual/Research, Inc., of Lansing, Michigan. He specializes in Great Lakes maritime history and is currently a Ph.D. candidate at Bowling Green State University, Bowling Green, Ohio.

News

NMM Acquires Sandwich Papers

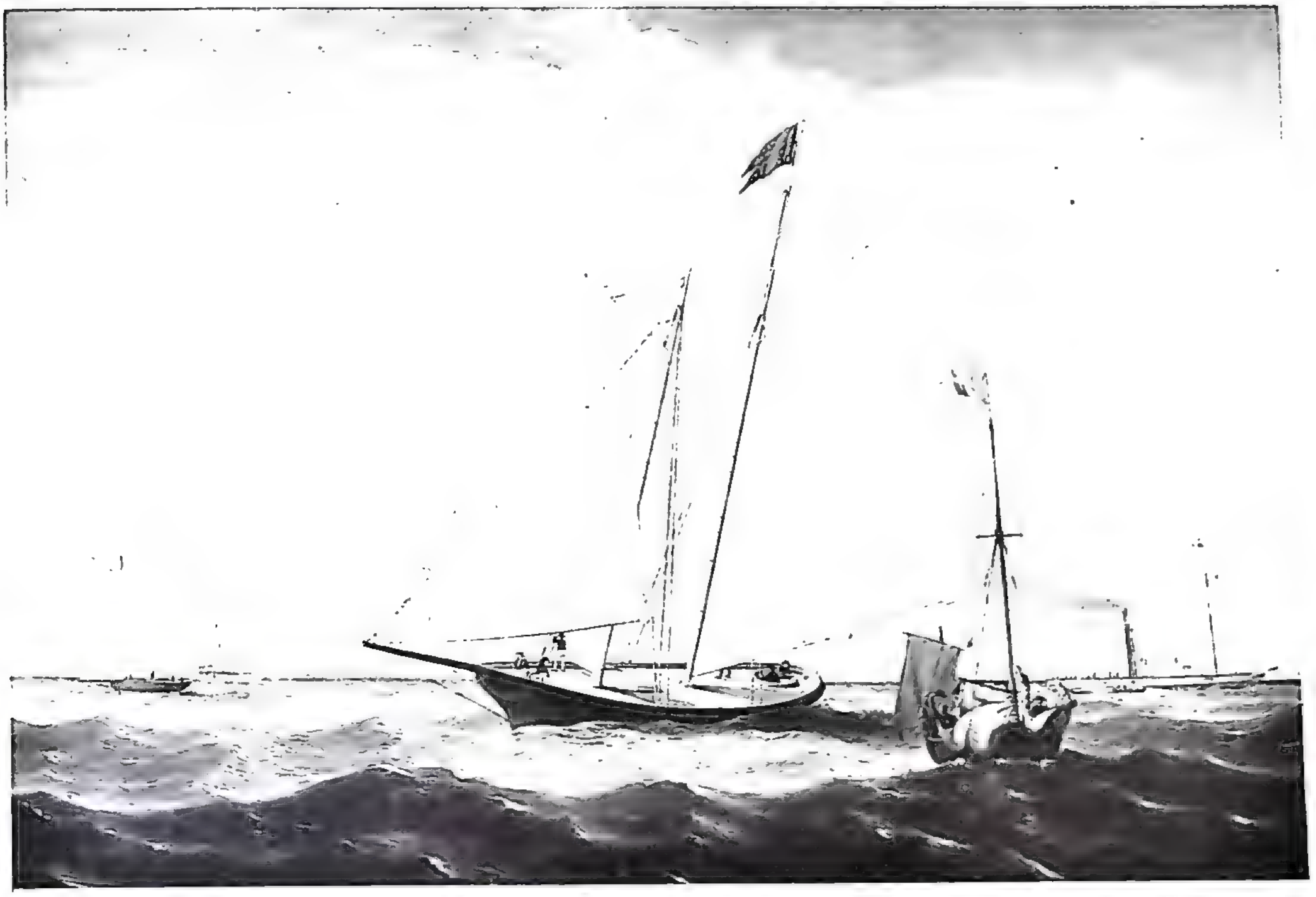
Dr. Roger A. Morriss, Head of Naval and Mercantile History at the National Maritime Museum, Greenwich, reports the recent purchase by NMM of the papers of John Montagu, Fourth Earl of Sandwich. Eighteenth century historians, and particularly maritime history specialists, will be interested in the papers of this prominent diplomat, politician, and administrator, whose career spanned most of the major events of the mid-eighteenth century. Sandwich served as plenipotentiary to the Hague, represented Great Britain at the peace conferences of Breda and Aix-la-Chappelle from November, 1746 to January, 1749, and was Secretary of State for the Northern Department from September of 1763 to July, 1765. He became first an Admiralty Commissioner between 1744 and 1747, and subsequently First Lord of the Admiralty between February, 1748 and June, 1751, April to August of 1763, and finally January, 1771 to March, 1782.

The Earl's papers consequently reflect relations between the "maritime powers" and France at the time of the mid-century peace, the state of Europe following the Seven Years War, and the conduct of British naval affairs, above all during the period of deteriorating relations with the American colonies and throughout the conflict in which they were lost. These main themes, moreover, are set within correspondence concerned with the politics of central government, patronage, and the local affairs of Huntingdonshire and Cambridgeshire.

There is, therefore, a wealth of material in this archive for historians of several different fields. For diplomatists alone, there are more than ninety volumes. However, this collection will probably be most valuable to those who wish to investigate naval aspects of the war of American Independence. Over 3,600 documents relate to naval affairs between 1771 and 1782, and include seventy notes and minutes of cabinet meetings and more than 300 letters from George III. Between 1932 and 1938, the Navy Records Society published four volumes of these papers. However, comparison of the volumes with the collection shows the published material to be truly only a careful selection of items relating to particular themes, and that far more remains in the archive for historians to mine.

For example, the collection includes papers of use to students of several particular subjects or institutions. There are categories concerning the East Indies; the East India Company; Trinity House affairs (Sandwich was three times Master of Trinity House between 1749 and 1782); Captain Cook's voyages; the Royal Hospital, Greenwich; and Irish affairs. Also, within the general run of naval correspondence, there are letters, memoranda, and accounts that touch on nautical subjects of almost every description: lighthouses and the health of seamen; the Astronomer Royal and Greenwich Observatory; John Harrison and his watches; dockyards, manning, and the marines. A major asset to the researcher is the report or list produced for the Royal Commission on Historical Manuscripts in 1976 by Sir Edward Warner. It contains both a brief summary of every document and an index to the correspondents.

The purchase of these papers, with the help of the National Heritage Memorial Fund and Friends of the National Libraries, should therefore generate reassessment in many fields. With other personal archives of contemporary papers now available (those of Hood and Middleton, and some papers of Rodney, Howe, and Keppel are also in NMM), research in the period is well served. One of the first subjects for reinterpretation will almost certainly be the degree of responsibility of Sandwich himself for the loss of the American colonies. Partly on account of apparent moral weakness in his private life — a love of the gaming tables, his friendship with John Wilkes, and a mistress who was murdered by a young clergyman — the Victorians and their heirs left Sandwich the scapegoat for an imperial disaster. Although these particular papers contain little that reveals the nature of his private life, they do fully document the depth of his experience, the range of his interests, his dedication to public affairs, and the problems and personalities with which he had to contend.



Fitz Hugh Lane's painting of the schooner yacht *America* winning the Hundred Guineas Cup at Cowes, 1851, is featured in "Sailing For Pleasure: Two Centuries of New England Yachting," opening November 7, 1991 at the Peabody Museum of Salem.

Yachting History Exhibition at the Peabody Museum of Salem

"Sailing For Pleasure: Two Centuries of New England Yachting" is set to open at the Peabody on November 7, 1991. The new permanent exhibit will highlight yachting on Massachusetts' north shore, and include an array of topics of historical and contemporary interest. Themes include the cruise of America's first yacht, *Cleopatra's Barge*, the first racing boats in Massachusetts Bay, famous designers, and modern racing and cruising. Call the museum at (508) 745-1876 for more information.

16th Annual Whaling Symposium at the Kendall Whaling Museum

The Kendall's popular weekend program, set for October 19-20, 1991, includes talks on historical and modern aspects of the industry. Contact the Kendall Whaling Museum at P.O. Box 297, Sharon, MA, 02067.

Summer Institute in Early Modern Maritime History

The John Carter Brown Library announces a four-week National Endowment for the Humanities Summer Institute on the maritime history of the fifteenth and sixteenth centuries during August, 1992. The institute is intended for college and university faculty in all humanities disciplines, and curators of cultural/historical organizations with significant maritime collections who have substantial teaching responsibilities. Drawing together participants and faculty with a variety of fields of specialization, the program will take a multidisciplinary approach to European exploration in that period in order to prepare scholars to become better teachers of the maritime humanities. A sequel Summer Institute in 1993 will focus on maritime trades of the seventeenth and eighteenth centuries. The Institute is limited to twenty participants; for more information, write to Maritime Institute, John Carter Brown Library, Box 1894, Providence, RI, 02912.

Mystic Seaport Museum Holds Maritime History Symposium

The eleventh annual symposium on southern New England maritime history will be held on Saturday, November 2, 1991 at the Seaman's Inne, Mystic. Topics include seven-masted schooners, lighthouses, New England-Nova Scotia trade, Pawtucket River shipbuilding, and the revolutionary sloop-of-war *Providence.* To register, contact the Curatorial Department, Mystic Seaport Museum, Mystic, CT, 06355-0990 or call (203) 572-0711, ext. 313 or 349.

Colonial Maritime Association Meeting

The theme of the fifth annual conference of the Colonial Maritime Association will be "the interpretation, preservation, and maintenance of colonial ships." The conference is scheduled for November 15 - 17, 1991 at the Ramada Inn, Kill Devil Hills, North Carolina. For membership and conference registration information, write to: Colonial Maritime Association, c/o Jamestown Settlement, P.O. Drawer JF, Williamsburg, VA 23187.

Recreation of First Boat to Carry Pilgrims Ashore

Plimoth Plantation has opened a new living exhibit featuring the construction of a seventeenth-century "shipboat" (ship's boat) like that which carried Mayflower passengers to their first landing in Provincetown, Massachusetts on November 11, 1620. Visitors can watch the vessel be constructed until early October, after which time it will be exhibited on the Plymouth waterfront.

"The Art of the Ship Modeler"

Ship models that were entered into the 1991 Scale Ship Model Competition and Exhibition at The Mariners' Museum in Newport News, Virginia, are on display until October 26, 1991. The competition attracts amateur and professional modelers who compete in a range of categories from scratchbuilt to kit, and from sailing ships to power ships. Contact the museum at (804) 595-0368 for additional information.

"Thomas Eakins: Reflections on the Water"

The Philadelphia Maritime Museum will host an exhibition of the works of Thomas Eakins from October 9, 1991 through March 15, 1992. The exhibit features oils, watercolors, and photographs, as well as the types of watercraft depicted in Eakins' works. Call (215) 925-5439 for information.

"Men's Lives"

A collection of photographs on exhibition at the Peabody Museum of Salem captures the rugged lives of commercial fishermen and the final days of a 300-year-old way of life on Long Island's South Fork; from October 10, 1991 through April 16, 1992.

National Archives Requests Assistance with Merchant Marine Exhibit

The National Archives - Mid Atlantic Region is preparing an exhibition to open December 7, 1991 on the role of the forgotten yet vital function of the Merchant Marine during WWII. Anyone with material that they would like to loan to the exhibition, such as Merchant Marine log books, vintage film footage, photographs, ship models, related artifacts, and oral histories should contact the National Archives - Mid Atlantic Region at: RM 1350, William Penn Post Office Annex, Philadelphia, PA 19107.

Barry-Hayes Papers Catalogued

The Philadelphia Maritime Museum has completed conservation and cataloguing of the papers of the Colonial naval hero Commodore John Barry (1745-1803) and his family. The papers, now available to researchers, relate to naval and merchant activities in Philadelphia from the American Revolution to after the close of the Civil War. Interested parties may obtain an overview of the papers by consulting the just-published *The Barry-Hayes Papers: A Descriptive Guide*, available through the museum.

Harbor Scenes on View at South Street Seaport

"Hemm'd Thick with Sailships: 19th Century Views of New York Harbor" is currently on display at the South Street Seaport Museum Gallery. The exhibit runs through February 16, 1992. For further information, contact the Museum Gallery on Water Street, New York, NY, 10038, or call (212) 669-9416.

Mystic Seaport Offers *Charles W. Morgan* Exhibit

America's sole surviving wooden whaleship is celebrating her 150th anniversary in 1991, and Mystic Seaport is observing the event with "Reflections of America: 150 Years of the *Charles W. Morgan*." Built in 1841, the *Morgan* sailed for more than eighty years. The exhibit, which runs through 1992, tells the story of building, working life, and restoration of the 113-foot vessel. For information, contact Mystic Seaport Museum, P. O. Box 6000, Mystic, CT, 06335-0990.

Historic Vessel Inventory Available

Some 300 large historic vessels in the United States are the subjects of the *1990 Inventory of Large Preserved Historic Vessels*, edited by James P. Delgado and Candace Clifford and published by the National Park Service's National Maritime Initiative. The volume provides text, pictures, charts, and statistics about the types and conditions of preserved historic vessels in the United States. For further information, contact the National Maritime Initiative, National Parks Service (418), P. O. Box 37127, Washington, DC, 20023-7127.

Columbus' Ships Replicas to Begin Transatlantic Voyage

Having completed their voyages along the Atlantic and Mediterranean coasts of Spain, replicas of the *Nina*, *Pinta*, and *Santa Maria* will begin the next phase of their journey — the thirty to fifty day voyage from Spain to Santo Domingo — on October 12, 1991. The expedition, under the auspices of the Organization of American States, is expected to be in New York on July 4, 1992. (OAS, 1889 F Street, NW, Washington, DC, 20006.) Meanwhile, the Spain '92 Foundation has released a list of twelve ports that will be visited by its replica caravels between Christmas of 1991 and October of 1992 in celebration of the Columbian Quincentenary. Travelling exhibits, including one entitled "Spain and America: From Discovery to Independence," will accompany the ships. For information, contact the Spain '92 Foundation, 150 East 58th St., 16th Floor, New York, NY 10155.

Harold L. Peterson Award Announced

The Eastern National Park and Monument Association, a non-profit, educational service institution cooperating with the National Park Service in support of its education and interpretive programs, offers the Harold L. Peterson Award annually. The award honors the prolific military author who was chief curator of the National Park Service and Chairman of the Board of Eastern National. The award carries an honorarium of $1,000 for the best scholarly, footnoted article on any facet of American military history, including naval and air. Articles dealing with economic, political, social, or cultural developments during a period of war or affecting military history between wars from the time of settlement until the present are also eligible for consideration.

Nominations for the award will cover articles published during the twelve months prior to June 30 of each year and should be made by the editor or managing editor of the publication in which the article appeared. Only three articles may be nominated by each periodical regardless of the number of issues published during that time. Three clear copies of the article must be submitted to ENP&MA, Peterson Award Committee, 446 North Lane, Conshohocken, PA 19428, not later than October 15, 1991. The award will be announced in late January.

For further information, contact Pat Mallory, Eastern National Park and Monument Association, 446 North Lane, Conshohocken, PA 19428, or call (215) 832-0555.

Readers are encouraged to send museum news and announcements of upcoming events and meetings to the Neptune*'s News Editor, Daniel Finamore, Associate Curator of Maritime History, the Peabody Museum of Salem, East India Square, Salem, MA 01970.*

Book Reviews

KENNETH J. HAGAN, *This People's Navy: The Making of American Sea Power* (New York: The Free Press, 1991). xiii + 434 pages, illustrations, bibliography, index. $27.95.

STEPHEN HOWARTH, *To Shining Sea: A History of the United States Navy, 1775-1991* (New York: Random House, 1991). xv + 620 pages, illustrations, notes, bibliography, index. $25.00.

Every generation has writers who have provided us with histories of the United States Navy. The roll call is a distinguished one, beginning with James Fenimore Cooper and proceeding through Alfred Thayer Mahan, Edgar S. Maclay, Dudley Knox, Harold and Margaret Sprout, Samuel Eliot Morison, E. B. Potter, and Edward L. Beach, to name only a few. Some have been naval officers, some civilians. Now two other authors have tried their hands, as the navy approaches its bicentennial.

Kenneth J. Hagan's *This People's Navy* can perhaps best be viewed as an extended interpretive essay rather than a history. As such, it is important to understand the premises which suffuse his work. To begin with, Hagan asserts that this country has had not one navy but two. The first was characterized by a desire to minimize expenditures, a distrust of fleets, and a reluctance to challenge openly the dominant naval power of the eighteenth and nineteenth centuries — Great Britain. This was a navy designed to protect American commerce in time of peace and to attack an enemy's commerce in time of war with well-built, well-armed frigates and sloops. It was a navy for coastal defense and commerce raiding: *guerre de course*.

The second navy owed much to Alfred Thayer Mahan's *The Influence of Sea Power Upon History, 1660-1783*, published in 1890. Its basis was the capital ship, operating in fleet strength, designed to meet and defeat similar fleets in decisive Trafalgar-like engagements to win command of the sea. This *guerre d'escadre* navy has dominated thinking to the present day.

Within the poles of *guerre de course* and *guerre d'escadre*, Hagan applies a number of "permanently interacting variables," including the external political and economic environment, the policies of the chief executive and his advisors, the temperament of Congress, the state of naval technology, the attitudes of the officer corps, and, finally, prevailing concepts about the nature of naval warfare.

Finally, the key to understanding Hagan's essay/history is geopolitical. Is the United States, like its British progenitor, a sea power, or *thallassocracy*? If so, reliance upon the theory of *guerre d'escadre* is correct. Or is the United States essentially a continental nation like the Soviet Union? If so, reliance upon the theory of *guerre de course* is appropriate. Hagan considers the latter to be the case.

Whereas many, if not most, historians of the United States Navy have considered a squadronal navy to be the norm, thereby projecting this back into the eighteenth and nineteenth centuries, Hagan has chosen to reverse the picture. It is commerce protection — maintaining sea lines of communication — that is significant. The ability to thwart commerce raiders (the defensive side of *guerre de course*) is of greater importance than the clash of fleets. Throughout, Hagan is critical of Mahan and "Mahanian historians."

He questions, for example, the significance of the Battle of Valcour Islands in 1776 (p. 9) and Mahan's views on the Battle of the Virginia Capes (1781), and subsequently supports Isaac Chauncey's reluctance to seek out the British squadron on Lake Ontario for a decisive engagement during the War of 1812. Similarly, he gives greater emphasis during the American Civil War to the exploits of Raphael Semmes than to the operations of the Union Navy. In World War I and World War II, the key to victory was mastering the U-boat threat in the Atlantic. In the Pacific theatre, the success of *guerre de course* against Japan receives equal, if not greater, billing than the fulfillment of War Plan Orange — the march westward across the Pacific in 1943-45.

The post-World War II navy therefore, in its continued reliance upon the capital ship (now the aircraft carrier) in the absence of a credible blue-water opponent,

has drawn the author's fire. Hagan criticizes Secretary of the Navy John Lehman's "maritime strategy," arguing that his "perception was fundamentally archaic." The harbinger of the navy of the future should be Elmo Zumwalt, who labored to create — or rather re-create — a navy designed to fight limited conventional wars and to intervene effectively as an instrument of modern "gunboat diplomacy" (p. 387).

These generalizations are both the strength and a weakness of Hagan's monograph. On occasion he may be guilty of oversimplification, as when he says: "[By 1918] the battle with Germany was over; the battle with Britain and Japan was about to begin" (p. 258). Yet before proponents of *guerre d'escadre* consign this book to the shelves to gather dust, they would do well to consider that his interpretation of the "American Way of War" at sea may be, for much of our history, correct.

Stephen Howarth's *To Shining Sea* is, perhaps even more than Hagan's work, aimed at a general readership. As such, it covers a great deal of familiar ground. Howarth's recounting of the loss of the frigate *Philadelphia* during the Barbary Wars, the engagement between the *Monitor* and the *Merrimack*, or Admiral George Dewey's fleet at Manila Bay, is done with freshness and vibrancy. Yet this does not result in any neglect of narrative flow, nor of the navy's strategic development and the growing importance of technology. Rather than being overwhelmed by post-1945 technological change, events are presented within a historical framework that encompasses both the United States Navy and the western naval/maritime tradition. Clearly, Howarth is more comfortable with the course of development in this era than is Hagan.

Howarth also differs from Hagan in seeing the United States as a maritime power by the mid-nineteenth century, even though he refers to the country as a "continental island" (pp. 560-61). As such, the development of a navy with offensive capabilities was bound to come sooner or later. He clearly takes issue with Hagan on geopolitical grounds. This difference suffuses his account no less than its counterpart does Hagan's, leaving readers of both books with the contrast clearly in view.

Neither account, given the constraints of a single volume, does a particularly good job of recounting naval operations during those conflicts in which the naval dimension proved both long-lasting and complex — particularly the Civil War (1861-65) and World War II (1939-45). Howarth does not even mention the operations against Fort Henry and Donelson in 1862, and gives only the briefest treatment of the expeditions against the Confederate Atlantic seaboard that same year. Hagan's preference for *guerre de course* suffuses his treatment of both wars as well. Samuel Eliot Morison's *The Two-Ocean War* and Ronald Spector's *Eagle Against the Sun* are still required reading for those interested in the oceanic operations of the United States Navy in the Second World War.

Perhaps Howarth, an English author, is returning the favor done by Alfred Thayer Mahan, whose writings had a decidedly pro-British Navy stance. The United States Navy has, in the twentieth century, picked up the trident so judiciously wielded by England from the mid-seventeenth century forward. This being so, and even in the absence of a major challenger at sea (again, comparable to the British position in the nineteenth century), it is likely that there will be a role for sea power of the *guerre d'escadre* variety well into the next century. That, certainly, is a conclusion which could be reached by readers of Howarth's work.

It would be well at the same time to recall that the *guerre de course* navy has also served the country well. Perhaps the nation may, despite recent events in the Persian Gulf, be able to accept a return to a significantly reduced, but no less able, naval establishment. With the publication of these two books, it is fair to say that the debate has been joined. It is also certain that neither will be the last word on the subject. If the past is prologue, which portion of the United States Navy's past is an accurate guide to the future?

RICHARD W. TURK

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BRIAN TUNSTALL, *Naval Warfare in the Age of Sail: The Evolution of Fighting Tactics 1650-1815*, ed. Nicholas Tracy (London: Conway Maritime Press and Annapolis, MD: Naval Institute Press, 1990). 295mm x 248 mm, cloth, 288 pages, 150 battle plans, 150 portraits and paintings, index. $48.95.

The completion and publication by one author of a work commenced by another, now deceased, is perhaps one of the most daunting tasks that any writer could ever undertake. At the same time, doing so is perhaps the highest accolade which an author and publisher can give to a colleague. This book falls under this category, and its initial author, Brian Tunstall, is more than worthy of this honor. Apart from being a notable naval scholar in his own right, Tunstall was also one of the best known

students and writers on the age of sail.

This work is divided into nine clearly defined chapters arranged chronologically from the earliest development of naval tactics to those employed in the Napoleonic Wars. In particular, Tunstall has focused on the early evolution of line tactics and the corollary development of tactics designed to break the enemy's line of battle. He argues that the evolution of naval tactics depended to a large degree upon the evolution of simple yet versatile signalling methods. Other crucial factors were the development of scientific understanding of the principles of seafaring, and an understanding of the crucial importance of mathematics upon signalling.

The author has not restricted his work to the study of naval tactics of any one nation. Instead, he provides an overview of the developments in this field from all the major sailing ship navies, including the young American fleet during and after the War of Independence. After all, naval tactics and signalling methods were never developed in a vacuum and were often stimulated by progress within other naval services.

This coffee-table sized book is heavily illustrated with both battle maps and contemporary illustrations and portraits. The former are very easy to understand, in part because a list of uniform table symbols was thoughtfully provided in an easy to find location in front of the main text. The portraits are also very interesting, but the contemporary drawings of the many battles covered are often of little benefit to the reader. One major drawback to the various tables of signals is the fact that no attempt was made to provide us with colored examples of the flags utilized in the many systems covered in this volume.

One surprising facet of this work is Tunstall's argument that the French Navy, in particular, did not have a deliberate policy of shooting at the masts and sails of enemy warships. Although he does not fully prove this contention, he does indicate that, among other things, there was no mention of this type of strategem in any of their signalling works or general publications on naval tactics. He further suggests that the British advantage in naval battles was their development of both better weapons and vastly superior gun mountings. For example, British guns tended to have a larger field of fire than those of the French and their other opponents.

Overall, this book is well-documented and written, and should be read by anyone interested in the development of naval tactics and signalling methods. It will also appeal to readers and writers interested in the days of the sailing ship navies.

PETER K. H. MISPELKAMP

Pointe Claire, Quebec

MAYNARD BRAY AND CARLTON PINHEIRO, *Herreshoff of Bristol: A Photographic History of America's Greatest Yacht and Boat Builders* (Brooklin, Maine: Woodenboat Publications, 1989). 10" x 11¼", cloth, xiv + 241 pages, 30 illustrations, introduction, epilogue, bibliography, and index. $45.00.

If the old saw that "a picture is worth a thousand words" has any substance at all, then *Herreshoff of Bristol: A Photographic History of America's Greatest Yacht and Boat Builders* by Maynard Bray and Carlton Pinheiro would rank with the Bible — if its marvelous photographic collection were translated into words.

While many remember the Herreshoff Manufacturing Company for the famous racing sailboats *Shadow*, *Reliance*, *Maisie*, *Enterprise*, and *Rainbow*, among a time-honored plethora of designs that originated from the Bristol, Rhode Island, yard, *Herreshoff of Bristol* reminds us of the broader picture behind the Herreshoff name, one that includes powerboats of all descriptions: steam yachts, U. S. Navy torpedo boats of the Spanish-American War era, high-speed gasoline launches, commuter yachts, diesel yachts, yacht tenders, World War II era coastal transports, and swift air-sea rescue boats.

The unique facility the Herreshoffs offered was their ability to take a vessel from concept to model, to plans, to loft, to construction, and to launch. The Boston naval architect Thomas F. McManus, with whom I have a passing familiarity, once cited Nathanial G. Herreshoff's business methods to one of his apprentices as the paradigmatic defense against design theft:

> My advice to anyone entering this line of business is, if you get up anything different or better than others, protect yourself by destroying the moulds after their initial use — do what the great designer Nat Herreshoff did — make no plan or design for any one, unless she was built in his own Yard, otherwise your ideas and plans will be used and sometimes without any recompense or credit.

Bray and Pinheiro are to be complimented and applauded for producing a volume that on first impression appears to be yet another coffee table book on yachting, but is in fact a historical treasure trove that will capture any reader's complete attention.

W. M. P. DUNNE

Sea Education Association, Inc.
Woods Hole, Massachusetts

BASIL GREENHILL AND JOHN HACKMAN, *The* Herzogin Cecilie — *The Life and Times of a Four-Masted Barque* (London: Conway Maritime Press, 1991) 10¾" x 7¾", hardcover, 224 pages, line plans, 125 photographs, 7 appendices, index. £25.

Co-authored by the former director of the National Maritime Museum at Greenwich, England, and an authority on the social and economic life of the Finnish archipelagos, this new book is the story of a beautiful four-masted barque launched in Bremerhaven, Germany, in 1902. It is based on material which had been long stored in archives in the Aland Islands in Finland, ever since *Herzogin Cecilie*'s mysterious loss on the rocks of the southern coast of England in 1936.

At 3,242 tons and 310 feet in length, longer than a football field, *Herzogin Cecilie* was a large sailing vessel but by no means the largest. Designed not only as a training-cadet ship but as a cargo carrier as well, she was very heavily rigged, capable of carrying sail in the foulest of weather, built and fitted to the highest standards.

The book carefully follows the life of the ship, her travels, her cargoes, her life story, her adventures. In 1914 she arrived in Coquimbo, Chile, seventy-four days out from the English Channel, with a cargo of coke, taken aboard in Nordenham, Germany. As World War I had started, the *Herzogin* remained at anchor for the next four years in Chilean waters. In the fall of 1920 she went back to work again, loading 3,900 tons of nitrate. She was eighty-two days on the road to Falmouth for orders, good going considering the growth on her bottom; it had been scraped somewhat but she had not been in dry dock during the war.

Her orders sent her on to Ostend to discharge. Now the French government took her over as part of the German reparation payment. A few months later, by the end of 1921, the *H.C.* changed flags again when she was purchased by the famous ship owner Gustaf Erikson of the Aland Islands in the Baltic, the man who owned the last sizable fleet of deep water windjammers still in service.

Although with only a third the crew of her German days, the four-master was to continue to be exceptionally fast when conditions were to her liking. On page 141 there is the following:

> She sailed from Barry Dock on 21 May. On this homeward passage she made, her log records, what is claimed as one of the fastest bursts of sailing ever, on 2 June, when she sailed from the Skaw Lightship to Laeso in the Skaggerack, a distance of 25 miles, in one and a quarter hours. Even if a possible current in her favor is deducted, her speed over the ground must have approached 20 knots. The wind was west-southwest, Force 8.

On page 207 in Appendix 3 this is rephrased: "June 2. Passed Skaw at 18.15 and Laeso at 19.15; 25 knots!"

During her Finnish days she had two very exceptional masters. The first, Captain Reuben de Cloux, took her over in 1921. The authors describe him as "a shipmaster who became internationally famous in the 1920s and early 30s as the commander of some of the finest remaining merchant sailing vessels left afloat, . . . a highly competent shipmaster and a man of considerable character and independence of mind." In 1929 he passed on the command to the young Sven Eriksson who, the year before, had become chief mate. Eriksson had first gone to sea in 1919; when he took over the *Herzogin* he had ten years of experience, but she was his first command.

This reviewer had the opportunity to serve aboard *Herzogin* under Eriksson, who belonged to the old school of seamen, tough and rugged. He was not a large man but he was fully in command. He had quite a reputation in the fleet as a driver, a no-nonsense individual. His was a job of high responsibility, for the ship, the crew, the cargo, and stowage. He was expected to make good fast passages, and it was up to him to find the needed winds. Several times when I was aboard we made a good 300 miles a day, the best being 341 miles.

The mystery of the *Herzogin Cecilie*, her loss, is well covered in the last fifty or so pages of the book. The barque had sailed from Port Lincoln, South Australia, on January 27, 1936, with 4,295 tons of wheat, arriving at Falmouth, England, "for orders" on April 23. She was eighty-six days out, her fastest passage ever. On April 24, with orders to proceed to Ipswich, the *Herzogin* got underway from Falmouth, heading to the eastward, up Channel. An evening mist thickened into a light fog, and then got thicker. The ship sailed on, steady, even, quiet. It was at 3:50 A.M. that Chief Mate Elis Karlsson suddenly observed a dark mass in the fog off the port bow. Seconds later the great barque was ashore on the rocks of Sewer Mill Cove (the book calls it Soar Mill Cove) near Bolt Head, Devon. Why she was there no one knew. There is no logical explanation to put the four-master so far off course. She should have been in deep water, well clear of the coast.

The authors have done a splendid piece of research covering the last hours of the ship. There are statements made by the master and chief mate and members of the crew. There is a copy of the letter written to Gustaf Erikson by Pamela Eriksson, wife of Sven; she had been aboard the ship during the world voyage. Perhaps the answer as to why the *H. C.* was wrecked is left up to the

reader — all the facts are laid out, and it is a matter of choice. One day in the middle of World War II, about eight years after the loss, I made my way down to Salcombe, the little village near Bolt Head, and chatted with those who remembered the accident. Some felt that there had been too much "drink," celebrating the eighty-six day passage from Australia.

For those who remember the great windjammers of yesteryear, this is a grand book, a brief glimpse again of the days gone by, names of people and ships and ports and places, stories of fair weather and foul. For those who came too late, born after the ships were gone, the book can give a verbal picture of how it was once upon a time long ago.

And speaking of pictures, the book is very well illustrated with some excellent photographs. The last picture in the book (p. 198) is sad indeed, for it shows the *Herzogin* in her last days, wrecked, hard ashore, but still fighting the seas and gales to the bitter end.

GILES M. S. TOD

Marion, Massachusetts

HARLOW A. HYDE, *Scraps of Paper: The Disarmament Treaties Between the World Wars* (Lincoln, Nebraska: Media Publishing, 1988). 8½" x 5½", paper, xx + 349 pages, illustrations, appendices, index, foreword by Admiral Elmo R. Zumwalt (ret.). $18.95.

This is the type of book that made the word "amateur" pejorative. While the subject of the naval arms limitation treaties of the interwar years might be fascinating, *Scraps of Paper* has such a sophomoric style that the author's writing undermines the substance.

The thesis of *Scraps of Paper* is that peace can be maintained only with military strength and that paper agreements do not supplant eternal vigilance. The author explicitly and implicitly compares the 1980s to the late 1930s. His unwritten premises are that the nuclear disarmament movement is ascendant, and that the Soviet Union under Gorbachev, with its *perestroika* and *glasnost*, is no different than Imperial Japan and the Third Reich. Although no one can foresee the future, Mr. Hyde's comparisons were difficult to accept in 1988, when the book was published, and seem even more so today.

To be fair, *Scraps of Paper* is not written merely as a parable but as a work of history, and that is how it must be judged. As a technical matter, the book lacks footnotes, which is unfortunate in any purportedly scholarly treatment, although the forty-three page bibliographical essay is comprehensive and well-written. The book recounts the delirium that greeted the 1922 Washington Conference and reviews the diplomacy surrounding the later Geneva and London conferences, the details of each arms treaty, how each was flawed, and the denouement of ever-increasing violations in the face of the well-intentioned but weak-willed leaders of the democracies.

Such a work might be written with understatement and without irony — the subject of the naval arms limitations treaties, like the conference in Munich, is a dish best served cold. The terrible ironies are apparent to any reader; the supineness of the starch-collared leaders of the democracies may be filleted with ease. But Mr. Hyde insists on writing with a cudgel, with outrageous, intrusive comments that mar the whole book.

For instance, his loathing for everything British (except Churchill) is unnecessary and unbalanced. Mr. Hyde terms the British navy "impotent" and thinks that he has a *bon mot* by reemphasizing that impotent is the "proper adjective" since "there is no elixir which will restore virility to the sterile" (p. 25); Ramsey MacDonald is a "lady-in-waiting" (p. 179) and Sir Ramsey, "the weak-hearted" (p. 223); the British delegates to the 1930 London Conference were "grand pooh-bahs" and an "endless train" of "Knights, Wizards, and Wozzels" (p. 194); and his greatest chuckle must have been over his own long-winded comparison of Chamberlain to Samson's weapon with the Philistines — that "unfortunately, in Chamberlain's case, the jawbone of the ass was an integral and nondetachable part of his personal anatomy" (p. 300).

To the Japanese, Mr. Hyde wields an equal dose of ham-handed invective. He refers to them as "little brown brothers" (p. 90); he writes that the Japanese "swore on a pile of Korans" [*sic*] (p. 78); he emphasizes the certainty of a proposition by noting that if it were not so, "then Hirohito doesn't eat rice" (p. 77). Almost every page, indeed almost every paragraph, has howlers that are invariably not humorous but are tasteless and jejune.

Beyond the overwrought style, however, Mr. Hyde makes many factual errors and debatable judgments. It would interest many to learn that the Catholic Church was on the side of the Loyalists and Communists in the Spanish Civil War (p. 277), that General George Marshall was the Army's Chief of Staff in 1938 (p. 288), or that the German Imperial Navy effectively trounced the Royal Navy in World War I (pp. 24-27). Mr Hyde chastises the United States for agreeing to the non-fortification provisions of the Washington Naval Treaty (pp. 89-90), glossing over the fact that the prohibition enabled the Marines not to be wasted as a garrison force that would have inevitably been crushed by Japanese invasions, but

instead to develop amphibious assault tactics that led to the counter-punching strategy of "island hopping." To Mr. Hyde, appeasement was a policy to "keep up appearances" when "the muscle was now gone from the British Empire" (p. 262) and not, as many historians have written, a policy reflecting the extreme war-aversion of the British people, intellectually rationalized as granting the "just" claims of the losers of World War I. Mr. Hyde regards the United States of the 1930s as "not a force to be considered" and asks rhetorically if there were "no wonder" that the dictatorships saw America as "weak and impotent" since the United States spent little on defense and had a tiny military establishment (p. 314). That judgment is too strong: while the United States, particularly in the Depression, became increasingly self-absorbed and isolated from world events, it was always seen as the democracies' great reserve of industrial, and therefore military, power. The question was whether the other democracies could hold off the dictatorships until the U.S.A.'s might could be brought to bear. Indeed, Mr. Hyde notes that Admiral Yamamoto, the great Japanese naval strategist, recognized the potential of the United States as the "arsenal of democracy," quoting his warning to his superiors, "I have seen the factories of Detroit . . ." (p. 196). Power is not, as Mr. Hyde implies, only equated with battleships or nuclear warheads; *vide* Paul Kennedy, *The Rise and Fall of the Great Powers*.

Although *Scraps of Paper* contains some interesting historical observations, it is a flawed book that would have benefitted from a sober editor with sharp scissors.

FREDERICK C. LEINER

Baltimore, Maryland

W. H. MITCHELL AND L. A. SAWYER, *The Empire Ships: A Record of British-built and Acquired Merchant Ships During the Second World War*, 2nd edition (London: Lloyds of London Press, Ltd., 1990). Hardcover, 506 pages, illustrations. £35 (£2 postage and packing).

It is a rare thing for a twenty-five year old book to be reprinted, but this is, indeed, a rare book. Out of print for many years, it was re-issued in a new edition because of great public demand, and Lloyd's Press deserves a round of thanks. A large volume, the work tells with rich detail the epic story of merchant ships built and acquired for British use from 1939 through 1945. It includes all those merchant vessels that had the prefix "Empire" added to their names, and gives information on their previous history and later life. This new edition includes much new material about these ships and about British shipyards. There are 120 illustrations, including several side elevation drawings and photos. The illustrations are usually sharp, with good black and white qualities, a welcome contrast to the faded, pale, and frequently poor photos common to many current maritime books. A majority of the photos are of little-known ships, small cargo vessels and obscure steamers, a guarantee that this work will be of interest to a very wide range of shipping people, those in the field as well as maritime historians. A fine work, this new edition is certainly a welcome and much needed publication.

FRANK O. BRAYNARD

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Kings Point, New York

JAMES P. DELGADO, *To California by Sea: A Maritime History of the California Gold Rush* (Columbia, South Carolina: University of South Carolina Press, 1990). xiv + 237 pages, illustrations. $24.95.

Late in the nineteenth century, a schoolmaster in the Highlands of Scotland divided literary endeavors, including the Bible, into two categories. The first, he said, were "telling books," and the second were "informing books." He was not implying that the two types were mutually exclusive, but simply that their aims were different. "Telling books," he noted, were biographies, novels, and narrative histories, and the format was essentially chronological. "Informing books," on the other hand, were primarily didactic, organized topically, and today would probably be called monographic.

To California by Sea is a good example of the best of the "informing books." It is well written, highly readable, carefully researched, and thoughtful in conclusions. While not neglecting a time frame, the author generally discusses a particular topic in depth and, having made his observations and commentary, moves along easily and gracefully to another related subject.

The overall topic is the California Gold Rush, but this is not an account of the Gold Rush *per se*. Instead, the book focuses on the role that seamen, ships, and maritime entrepreneurial activity played in those few very particular years of California's history. To reach California in the late 1840s, a traveller had two alternatives — neither particularly comfortable and both very arduous. The first was by land, for it was theoretically possible to travel on foot and by horse from New York to San Francisco. The second was by sea, initially around Cape Horn. In both

cases the journey was lengthy and hazardous; only the most intrepid would care to make the journey more than once. American ingenuity soon devised a better route to the Pacific, in which voyagers initially embarked on ship from an east coast port, made their way to the Isthmus of Panama, crossed the narrow stretch of land, re-embarked on the Pacific side, and travelled to San Francisco. The trip was further shortened by the advent of the Trans-Isthmusian Railway, completed in 1855, but by then the Gold Rush was over. However, the railway remained a useful route until the transcontinental railway was built and the Canal was opened.

Delgado enlivens his account of the journey with reports of shipboard activity of crew and passengers, the food and provisions needed, the cargoes that were carried, and the general cost of the trip. It was not cheap to travel to California by sea. Passage on a steamer for only the part of the voyage from Panama to San Francisco was $150 for steerage. (This is probably comparable to the cost of flying first class from New York to London.) The author does not neglect an aspect of maritime history that is sometimes forgotten, namely, how the port of San Francisco and the general economic life of the community was organized. He also discusses the elements of the Federal government that were present in San Francisco in the period after the end of the Mexican War. The presence of the United States Navy was a very real indicator of Washington's authority and interest in the port. The Navy guaranteed that the port was properly policed, and it made sure that it would be a permanent part of San Francisco's port by the establishment of the Mare Island Naval Base.

Maritime disasters were frequent on passages to California, and the author provides graphic reports of what sometimes happened. Shipping losses were costly and many an owner was reduced to bankruptcy as a result. The number of victims was substantial — passengers were very much at the mercy of captains and crew. One example of such a mishap is the tale of the sinking of the *Winfield Scott* in December of 1853, which illustrates how with a capable master and efficient crew everyone was rescued, albeit under not very auspicious circumstances. Later, the survivors of the wreck and the residents of San Francisco were to report in a most damning manner about the captain's behavior. Delgado explains that the outrage over various "maritime disasters of the Gold Rush provided the impetus for aid to navigation" but at the same time gave "stronger support to the transcontinental railroad" (p. 170). Such catastrophes helped to lessen the primacy of shipping; a new era was to begin with "the iron horse."

The end of the story is somewhat *triste*. A number of vessels that had served the voyagers to California well were not to be found at anchor in the harbor of San Francisco. Most of these were never to sail again; they were broken up by Charles Hare, who purchased the hulks and put "the shattered timbers in one pile, the iron bolts in another, the copper in another, the cordage in another. . . in a short time all that remained . . . were so many ghastly piles of marine debris" (p. 172). As the author puts it, "the passing of the idle hulks on the waterfront . . . comprised the last act in the maritime drama of the Gold Rush" (p. 173). Interestingly enough, a number of those who had been to California continued to keep in contact with each other through various organizations essentially nostalgic in origin. The Gold Rush was for many the great adventure of their lives, and existence thereafter was very mundane indeed.

It is not often that a reviewer has the pleasure of being able to compliment a publisher on a work, but in this instance the University of South Carolina Press should be praised for the production of this book. The Press has ensured that the author can feel that his literary efforts have received the best possible reward. This is a good book, useful and highly readable, a first class contribution to American maritime history.

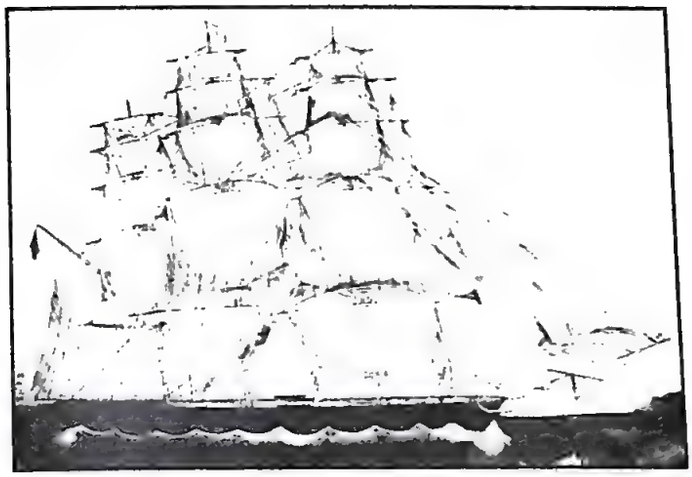
S. W. JACKMAN

University of Victoria
Victoria, B. C.

The Publisher Apologizes!

We try very hard not to make mistakes, and to correct any that might creep in during the publication process. But when we do err, we seem to do it on a large scale: In John R. Herbert's favorable review of Freda Morrill Abrams' first rate account of the *Tall Ships of Newburyport* (Vol. 51, No. 1), we identified the Free *Wind* Press as the Free *World* Press, understated the total 71 pages as 63 pages, and cut the actual price of $14.95 (at which it is a bargain) to an unwarranted firesale price of $4.95. *The American Neptune* regrets these errors.

Tall Ships of Newburyport



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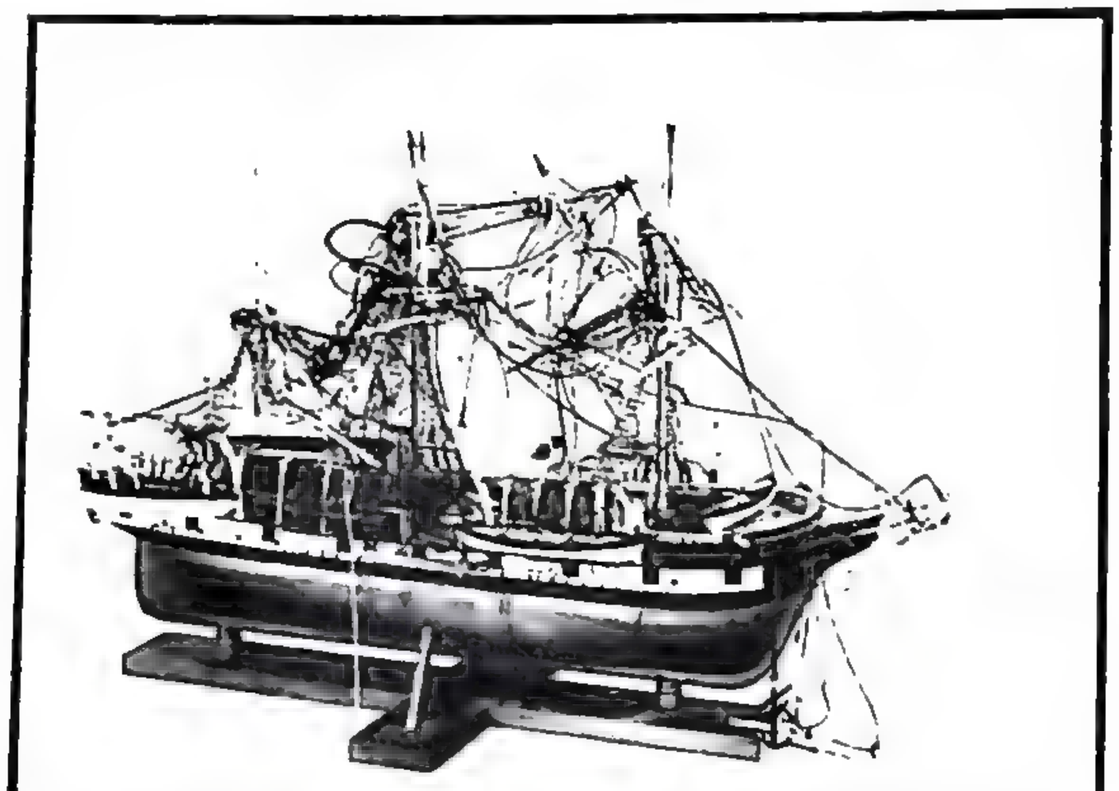

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See Shomette's article about the De Braak *in this issue.*
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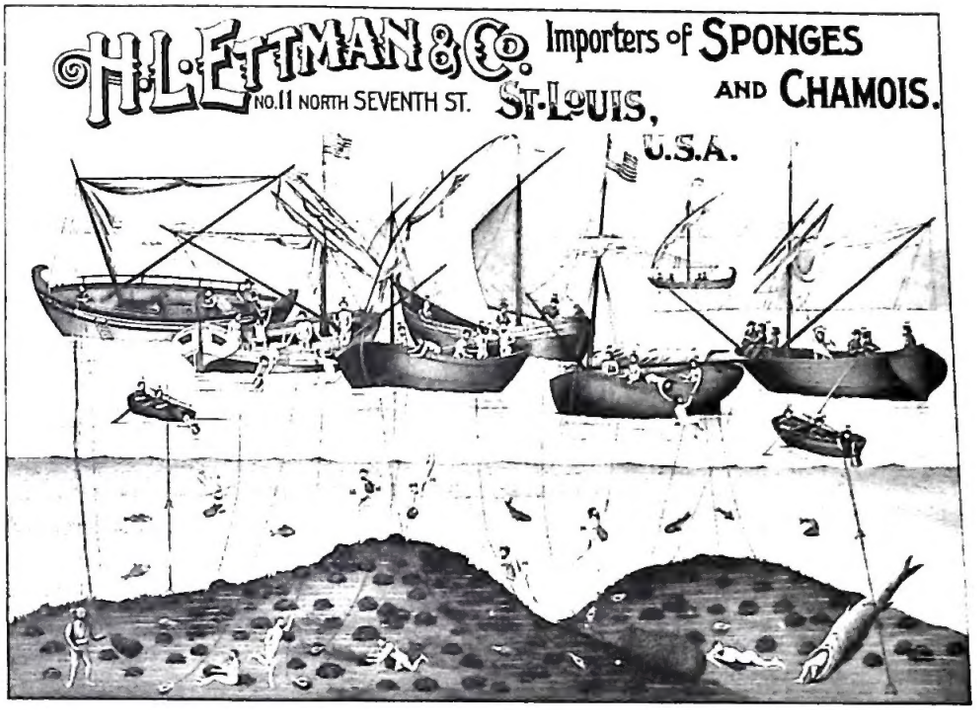

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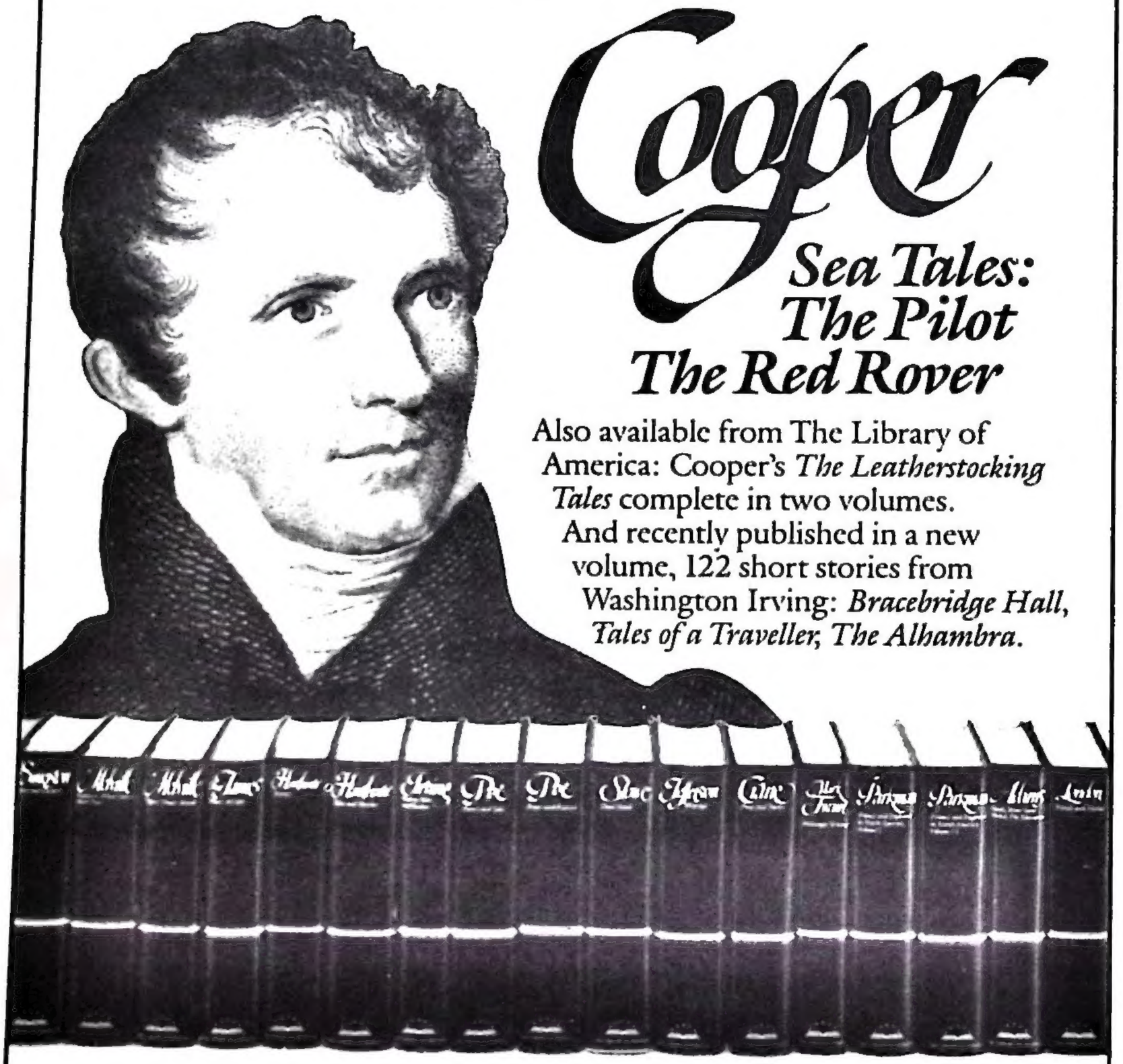

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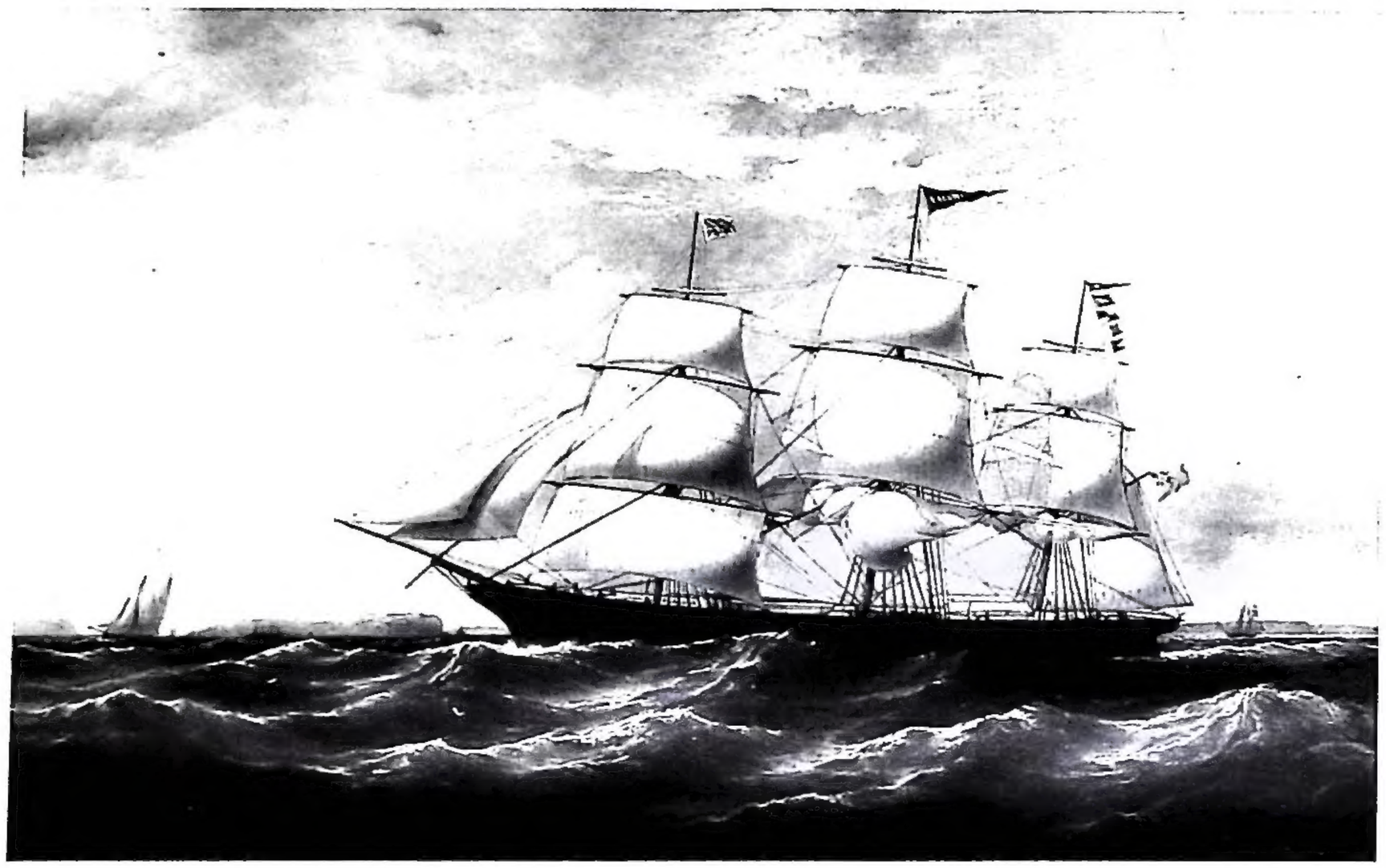

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